

Y 4. SE 2/1 A:995-96/25

National Defense Authorization Act... GS

ON

NATIONAL DEFENSE AUTHORIZATION ACT
FOR FISCAL YEAR 1997—H.R. 3230

AND

OVERSIGHT OF PREVIOUSLY AUTHORIZED
PROGRAMS

BEFORE THE

COMMITTEE ON NATIONAL SECURITY
HOUSE OF REPRESENTATIVES
ONE HUNDRED FOURTH CONGRESS
SECOND SESSION

MILITARY RESEARCH AND DEVELOPMENT
SUBCOMMITTEE HEARINGS
ON

**TITLE II—RESEARCH, DEVELOPMENT,
TEST, AND EVALUATION**

HEARINGS HELD
MARCH 5 AND 12, 1996



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104TH CONGRESS
2D SESSION

H. R. 3230

To authorize appropriations for fiscal year 1997 for military activities of the Department of Defense, to prescribe military personnel strengths for fiscal year 1997, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 15, 1996

MR. SPENCE (for himself and Mr. DELLUMS) (both by request) introduced the following bill; which was referred to the Committee on National Security

A BILL

To authorize appropriations for fiscal year 1997 for military activities of the Department of Defense, to prescribe military personnel strengths for fiscal year 1997, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "National Defense Authorization Act for Fiscal Year 1997".

* * * * *

TITLE II—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

SEC. 201. AUTHORIZATION OF APPROPRIATIONS.

Funds are hereby authorized to be appropriated for fiscal year 1997 for the use of the Armed Forces for research, development, test, and evaluation, as follows:

- (1) For the Army, \$4,320,640,000.
- (2) For the Navy, \$7,334,734,000.
- (3) For the Air Force, \$14,417,456,000.
- (4) For Defense-wide research, development, test, and evaluation, \$8,672,842,000, of which—
 - (A) \$252,038,000 is authorized for the activities of the Director, Test and Evaluation; and
 - (B) \$21,968,000 is authorized for the Director of Operational Test and Evaluation.

SEC. 202. LIVE-FIRE SURVIVABILITY TESTING OF V-22 AIRCRAFT.

(a) **AUTHORITY FOR RETROACTIVE WAIVER.**—The Secretary of Defense may exercise the waiver authority in section 2366(c) of title 10, United States Code, with respect to the application of survivability testing to the V-22 aircraft, notwithstanding that the program has entered engineering and manufacturing development.

(b) **ALTERNATIVE SURVIVABILITY TEST REQUIREMENTS.**—The Secretary of Defense shall make available a sufficient number of components critical to the surviv-

ability of the V-22 aircraft in realistic threat environments to conduct the alternative live-fire test program.

(c) FUNDING.—The funds required to carry out any alternative live-fire testing program for the V-22 aircraft system shall be made available from amounts appropriated for the V-22 program.

SEC. 203. LIVE-FIRE SURVIVABILITY TESTING OF F-22 AIRCRAFT.

(a) AUTHORITY FOR RETROACTIVE WAIVER.—The Secretary of Defense may exercise the waiver authority in section 2366(c) of title 10, United States Code, with respect to the application of the survivability tests of that section to the F-22 aircraft, notwithstanding that such program has entered full-scale engineering development.

(b) REPORTING REQUIREMENT.—If the Secretary of Defense submits a certification under section 2366(c) of such title 10 that live-fire testing of the F-22 system under such section would be unreasonably expensive and impractical, the Secretary of Defense shall require that sufficiently large and realistic components and subsystems that could affect the survivability of the F-22 system be made available for any alternative live-fire test program.

(c) FUNDING.—The funds required to carry out any alternative live-fire testing program for the F-22 aircraft system shall be made available from amounts appropriated for the F-22 program.

SEC. 204. RESEARCH ACTIVITIES OF THE DEFENSE ADVANCED RESEARCH PROJECTS AGENCY.

Notwithstanding section 1701 of the National Defense Authorization Act for Fiscal Year 1994 (Public Law 103-160; 107 Stat. 1853), the Director of the Defense Advanced Research Projects Agency, for the Secretary of Defense, may conduct basic and applied research and advanced technology development, on chemical and biological warfare defense technologies and systems, independently of any other component of the Department of Defense. In conducting its mission of basic and applied research and advanced technology development, the Advanced Research Projects Agency should avoid unnecessary duplication of efforts of other components of the Department. With respect to chemical and biological warfare defense activities and where otherwise appropriate, coordinate its activities with other components of the Department.

* * * * *

FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS

HOUSE OF REPRESENTATIVES,
COMMITTEE ON NATIONAL SECURITY,
MILITARY RESEARCH AND DEVELOPMENT SUBCOMMITTEE,
Washington, DC, Tuesday, March 5, 1996.

The subcommittee met, pursuant to notice, at 2:19 p.m., in room 2118, Rayburn House Office Building, Hon. Curt Weldon (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. CURT WELDON, A REPRESENTATIVE FROM PENNSYLVANIA, CHAIRMAN, MILITARY RESEARCH AND DEVELOPMENT SUBCOMMITTEE

Mr. WELDON. The subcommittee will now come to order. I apologize for being late. I was meeting with General Garner in a session that was unfortunately terminated last week—for him to brief me. We were able to get him in today, and he briefed me in my office.

Welcome to the hearing, and I appreciate the administration allowing you to come over, Dr. Kaminski. We had been told last week in a press release that was sent out by my colleagues that there was an administration policy that until the Secretary of Defense had the opportunity to testify before the committee, there would be no other witnesses. That was in spite of the fact that the day before, Vice Admiral Owens had testified before the Senate Armed Services Committee on issues that were to be before this subcommittee the day after. We have also had three other witnesses from the administration.

We are happy to have you today. My policy differences with the administration notwithstanding, I welcome your appearance here today to talk about FFRDC's and welcome the opportunity to work with you this year in making sure that we are committed to our FFRDC's. In fact, since 1942 with the establishment of the Center for Naval Analysis and in 1948 with the establishment of the Rand Project Air Force, the number of FFRDC's has grown to serve the expanding roles and mission requirements of the Department.

In the past decade, however, the continued use of FFRDC's has been the subject of considerable scrutiny and criticism by people both inside and outside of Government. There are also claims that the reason FFRDC's were established in the first place no longer exists and that they are now cold-war relics of the past. There are claims that the work performed by FFRDC's can be performed by private industry, which believes that it possesses the technical talent and management discipline to do the job more effectively and at lower costs through competition. There have been at least 20 studies by the General Accounting Office [GAO], Inspector General

[IG], Defense Science Board [DSB], Congressional Research Service [CRS] and the Department of Defense [DOD] on topics from excessive executive compensation to the inappropriate uses of contract fee by FFRDC's as well as challenges to the Department's ability to manage these institutions to control growth which has been contained by congressional action through personnel and budget ceilings. Both the House and Senate Authorization and Appropriations Committees have implemented legislation over the last couple of years that has put considerable pressure on the Department and the FFRDC's to address private industry concerns as well as the findings of these studies.

In response to recent congressional legislation, the Department has proposed a plan that puts into play a clear understanding of the missions of FFRDC's and FFRDC-like institutions, particularly the university-affiliated research centers or UARC's, as they are commonly called, and the value they bring to the Department. A major point to be discussed here today is the issue of private-sector compensation for FFRDC work and why competition will not work for certain DOD tasks that FFRDC's perform.

Today, we will hear the Department's views on the core tasks for FFRDC's and the strategic relationship that must exist for these core tasks to be performed effectively and without competition. I want to welcome Dr. Kaminski, the Undersecretary of Defense for Acquisition and Technology, who will be discussing the Department's views on retaining FFRDC capability and the current plan for managing these centers. I also welcome the following directors of a number of key FFRDC's and UARC's, who will provide a perspective of the efficacy of DOD's FFRDC plan and their ability to perform their strategic relationship functions under the management and its management tenants. We welcome Mr. Pete Aldridge, president and CEO of the Aerospace Corp.; Mr. Walt Morrow, director of MIT Lincoln Laboratory; Mr. Larry Druffel, director of the Software Engineering Institute; and Dr. Gary Smith of the Johns Hopkins Applied Physics Laboratory, a university-affiliated research center.

We thank you for being here with us today and look forward to your testimony on this important topic. I believe we have an opportunity today to put to rest some of these lingering issues and to get on with the business of providing technology and support to the military services, and I welcome you to our hearing today. We are very pleased to have you before us. It is much better to have a hearing with faces out there than blank name tags. We are very happy to have you here, Dr. Kaminski.

[The prepared statement of Mr. Weldon follows:]

**STATEMENT OF CHAIRMAN WELDON
FEDERALLY FUNDED RESEARCH & DEVELOPMENT CENTERS
MARCH 5, 1996**

Since 1942 with the establishment of the Center for Naval Analysis and in 1948 with the establishment of RAND - Project Air Force, the number of FFRDCs has grown to serve the expanding roles and mission requirements of the Department.

In the past decade however the continued use of FFRDCs has been subject to considerable scrutiny and criticism by people both in and outside of government.

There are also claims that the reason FFRDCs were established in the first place, no longer exists and that they are now cold war relics of the past.

There are claims that the work performed by FFRDCs can be performed by private industry which believes that it possesses the technical talent and management discipline to do the job more effectively and at lower cost through competition.

There have been at least 20 studies, by the GAO, IG, DSB, CRS and the DoD on topics from excessive executive compensation to the inappropriate uses of contract "fee" by FFRDCs, as well as challenges to the Department's ability to manage these institutions to control growth which has been contained by congressional action through personnel and budget ceilings. Both the House and Senate Authorization and Appropriations Committees have implemented legislation over the last couple of years that has put considerable pressure on the Department and the FFRDCs to address private industry concerns as well as the findings of these studies.

In response to recent congressional legislation, the Department has proposed a plan that puts into play a clearer understanding of the missions of FFRDCs and "FFRDC like" institutions, particularly the University

Affiliated Research Centers or UARCs as they are commonly called, and the value they bring to the Department.

A major point to be discussed here today is the issue of private sector competition for FFRDC work and why competition won't work for certain DoD tasks that FFRDCs perform. Today, we will hear the Department's views on the "core" tasks for FFRDCs and the "strategic relationship" that must exist for these "core" tasks to be performed effectively, and without competition.

I want to welcome Dr. Paul Kaminski, the Under Secretary of Defense for Acquisition and Technology, who will be discussing the Department's views on retaining an FFRDC capability and the current plan for managing these centers.

I also welcome the following directors of a number of key FFRDCs and UARCs who will provide a perspective of the efficacy of DoD's FFRDC plan and their ability to perform their "strategic relationship" functions under its management tenets.

We welcome Mr. Pete Aldridge president and CEO of the Aerospace Corporation; Mr. Walt Morrow, Director of MIT, Lincoln Laboratory; Mr. Larry Druffel, of the Software Engineering Institute; and Dr. Gary Smith, of the Johns Hopkins Applied Physics Laboratory, a University Affiliated Research Laboratory. We thank you for being here with us today and look forward to your testimony on this important topic.

I believe we have an opportunity today to put to rest some of these lingering issues and get on with the business of providing technology and support to the military services.

Before beginning, the Chair recognizes the ranking minority member, Mr. Spratt, for any statement he may have.

Mr. WELDON. I would now turn to the ranking member for his opening statement.

STATEMENT OF HON. JOHN M. SPRATT, JR., A REPRESENTATIVE FROM SOUTH CAROLINA, RANKING MINORITY MEMBER, MILITARY RESEARCH AND DEVELOPMENT SUB-COMMITTEE

Mr. SPRATT. Thank you, Mr. Chairman. This is a low-profile issue with high-profile importance. I commend you for drawing the committee's focus to this particular subject. I think you have stated the issues well, and I look forward to the testimony of our witnesses today. Thank you all for coming.

Mr. WELDON. Dr. Kaminski.

STATEMENT OF PAUL G. KAMINSKI, UNDER SECRETARY OF DEFENSE FOR ACQUISITION AND TECHNOLOGY

Mr. KAMINSKI. Thank you, Mr. Chairman. Mr. Chairman, I would like to take the opportunity to commend you personally and the committee for allowing this session to occur to get what I think are the very critical issues of the FFRDC's out on the record. I would like to submit, with your permission, my formal statement for the record.

Mr. WELDON. Without objection.

Mr. KAMINSKI. And I also would like to submit on their behalf statements for the record from each of our service acquisition records, our Army, Navy, and Air Force service acquisition executives who also have very strong feelings on these issues.

Mr. WELDON. Without objection.

Mr. KAMINSKI. And two of those members are here today behind me. I wonder if I might introduce them.

Mr. WELDON. Absolutely.

Mr. KAMINSKI. Mr. Decker, the Assistant Secretary of the Army for RD&A.

Mr. WELDON. Welcome.

Mr. KAMINSKI. And Mr. Douglas, the Assistant Secretary of the Navy for RD&A.

Mr. WELDON. Welcome.

Mr. KAMINSKI. Also behind me, my Director of Defense Research and Engineering, Dr. Anita Jones, who has worked on these issues.

Mr. WELDON. Welcome, Dr. Jones.

Mr. KAMINSKI. As I look at the issues of FFRDC's and our university-affiliated research centers, I go back to my own personal experience having worked with many of these institutions over a 20-year career in the Air Force, also having worked with them during the period of time I served as a member and chairman of the Defense Science Board and also in my current position. I know firsthand the values that they have brought to the Department of Defense through the years and the many important issues that they have tackled.

I wonder if I might have my first chart.

[The information follows:]

How Did We Get Here?

Congress expressed concerns over DoD's management and operation of its FFRDCs in FY95

Continuing need for FFRDCs

Expansion beyond FFRDC original mission

Growth in other-than FFRDC activities of parent corporations

Compensation of senior FFRDC executives

Amount and use of management fees

Lack of a plan to address issues/concerns

Series of actions initiated - completed in 1995

Mr. KAMINSKI. I would start off by providing some perspective in the form of how did we get here to start with. We got here really because of a series of expressions of concerns in the midnineties which really, perhaps, reached a peak about the 1994-95 time-frame. There were concerns expressed over DOD's management and operation of our FFRDC's. There was some concern expressed about whether, in fact, we had a need for FFRDC's; whether the institutions were expanding beyond their original mission; whether there was growth in other than FFRDC activities of parent corporations that were creating problems. Also, there were some concerns expressed about compensation of senior executives; about the amount and the use of management fees; and the lack of a plan to address these issues and concerns.

I would say that shortly after arriving in my job a little over a year ago, I looked at the record here and the discussion and decided that it was time for the Department to start responding to these concerns in a thorough and forceful way, and so I took on that issue as a major personal initiative. We looked at each of these issues, for example, the need for FFRDC's.

Two independent studies strongly reaffirmed the need for these institutions in the future. We looked at the issues associated with expansion beyond the original FFRDC mission and the growth in the other FFRDC activities of parent corporations. We concluded that there were problems here and that we needed to take some steps to address those issues, and I will describe those steps in the testimonies that follow. We looked at the compensation of the senior FFRDC executives, and we found generally, there was not a problem here. We had done an independent compensation study and found generally that things were in order. And with respect to the lack of a plan to address the issues and concerns, we prepared such a plan and delivered that to the Congress in May 1995, and I will cover a few of the highlights of what the composition of that plan might be.

Next chart, please.

[The information follows:]

Management Studies and Reports

<u>Study</u>	<u>Outcome</u>
• DSB Task Force	• Strategic relationship with FFRDC-like organizations are essential
• DoD Senior Advisory Group	• Retain FFRDC-like organization • Define “core” and “non-core” work • FFRDC/UARC management action plan
• FFRDC Management Fee	• Justify need for fee • Eliminate allowable costs from fee • Implement consistent guidelines
• Hay Study on Executive Compensation	• FFRDC compensation is competitive for markets from which they compete for people

Mr. KAMINSKI. Mr. Chairman, I would review sort of the major studies and initiatives that we have done in response to the concern. The first thing that we did was established an independent Defense Science Board task force that was chaired by Dr. Bob Herman of United Technologies to get an independent, outside look at FFRDC's. This effort was involved in what I will describe as a very full and vigorous debate on the role, the need for, and the appropriate use of FFRDC's. At the end of this vigorous debate, the outcome and the recommendation of this independent review was that the strategic relationships between the Department of Defense and the FFRDC's were essential. They reaffirmed the need for these elements. They commented specifically about the high quality of the work; the high value added of the analytical work; and noted that we could not provide such high-quality work as effectively by any other means.

Second, as that review group concluded, I asked Dr. Jones to form up a senior advisory group within the Department, also to give me an independent view, working with the services on our FFRDC's. They too concluded that we need to retain our FFRDC-like organizations. As part of the review, they dealt with the problems that I mentioned earlier regarding expansion of mission and activities of the parent. They recommended to me a program approach involving the use of the definitions of core work and noncore work, and I will talk about these two concepts in a minute. They also prepared the framework for our FFRDC/UARC management plan, which was forwarded to the Congress in May 1995.

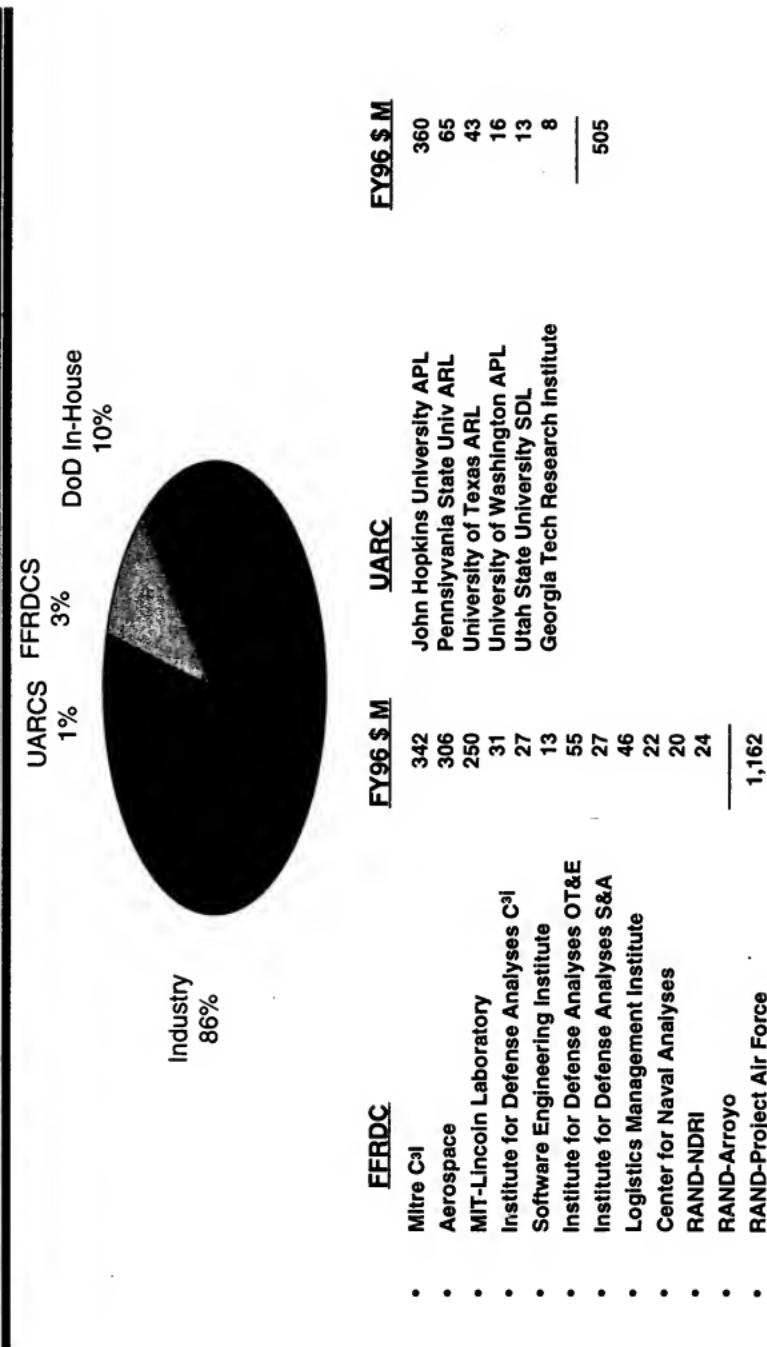
On the issue of the FFRDC management fee, we have gone back and taken an independent look at this issue. We have, right now, guidelines in final coordination in the Department which go back and look fundamentally at the justification for the fee, the need for a fee in the nonprofit institutions and procedures to deal with eliminating allowable costs from fee and in the end coming up with a set of consistent implementation guidelines.

And the fourth element in the study, which we have also provided to the Congress, was an independent study done by the Hay Group, a set of independent compensation consultants, to look at the FFRDC compensation. And what the group concluded was that compensation for the medium and senior staff members was competitive for the markets in which they compete for people. They also looked at the compensation of CEO's and concluded that for the most part, the average CEO in our FFRDC's was compensated at a lower rate than what would be the standard for comparable industry.

If I might have the next chart, please.

[The information follows:]

FFRDC and UARC FY 1996 Funding -- Percent of RDT&E Budget



Mr. KAMINSKI. This chart lays out the big picture in terms of where do FFRDC's and UARC's fit in the overall Department's budget. In green, 86 percent of the Department's budget is involved in contracted efforts with industry. About 10 percent of our effort, white shaded yellow on the chart, represents the work that is done in-house in the DOD. And then, about 3 percent of our funds go to FFRDC's and about 1 percent to the university-affiliated research centers. The FFRDC's are listed on the left-hand side of the chart, starting first with our two system engineering and integration FFRDC's, Mitre and Aerospace; next, with our three R&D FFRDC's, MIT Lincoln Lab, the Institute for Defense Analysis C3I Center, and our Software Engineering Institute; and then, finally, with our studies and analysis FFRDC's. And I have also listed here the fiscal year 1996 funding that went with each of the FFRDC's, resulting in a total as illustrated on the bottom. And then, on the right-hand side, I have listed our six university-affiliated research centers and also the fiscal year 1996 funding associated with each.

I will not take the time today to go through each of the FFRDC's and UARC's and what they do for the Department, but I have chosen two, simply to give you a representative idea of the type of work done, what the institution has contributed to the Department in the past, and what they are contributing in the present program. The first illustration is the MIT Lincoln Laboratory. The Lincoln Laboratory mission statement is to demonstrate technical feasibility of advanced systems, concepts, and technologies working in the field in which the core competencies involve ballistic missile defense, communications, space and surface surveillance systems, air defense, and advanced electronics technology.

Some of the achievements contributed in the past were the whole foundation for our Jointstars moving target indication and synthetic aperture radar system, which is in the throes now of final operational tests and evaluation. Lincoln Lab developed the fundamental concepts for digital signal processing to eliminate ground clutter for the system and also did the fundamental proof of concept work to allow for multiple antenna techniques to provide clutter cancellation. They also were involved in the technology transfer from a demonstration program called Pave Movers into the successful application to the Jointstars system, so they were involved in the fundamental, underlying technology underpinnings of the Jointstars system that is now in the final throes of development and now entering production.

I was associated personally with the Lincoln Laboratory during the period of time I was the director of the DOD Stealth program. Lincoln was an invaluable contributor during that phase of the program, providing us with the critical foundation and the understanding of ground clutter, developing a program to measure that clutter, and the various models that allowed us to incorporate the key algorithms which were critical to the mission planning and routing done for the F-117 and for our Cruise missiles in their operational use. Lincoln is working in a variety of fields today. I have illustrated one on the chart: their work in support of theater high-altitude area defense, work here in developing the technology to produce large, uniform infrared focal planned arrays for the THAAD seeker and the discrimination algorithms to be able to pick

the target out of the background for the THAAD radar. They are also involved in the critical flight test measurements program for this key national program.

The other institution that I wanted to highlight, just as an example, is one of our university-affiliated research centers, in this case, the Applied Research Laboratory located at Penn State University. Their mission statement is to advance the Navy's technology base in undersea warfare with core competencies in the guidance and control of undersea weapons, thermal propulsion and propulsors in general, and advanced undersea materials and manufacturing. They also have done work in atmosphere and undersea communication systems. As I look back at their accomplishments through the years, they have been the designer of 21 different propulsors and hydronamic devices for surface ships, submarines, and weapons dating all the way back to 1965. They developed the propulsor for our SSN-21 submarine system.

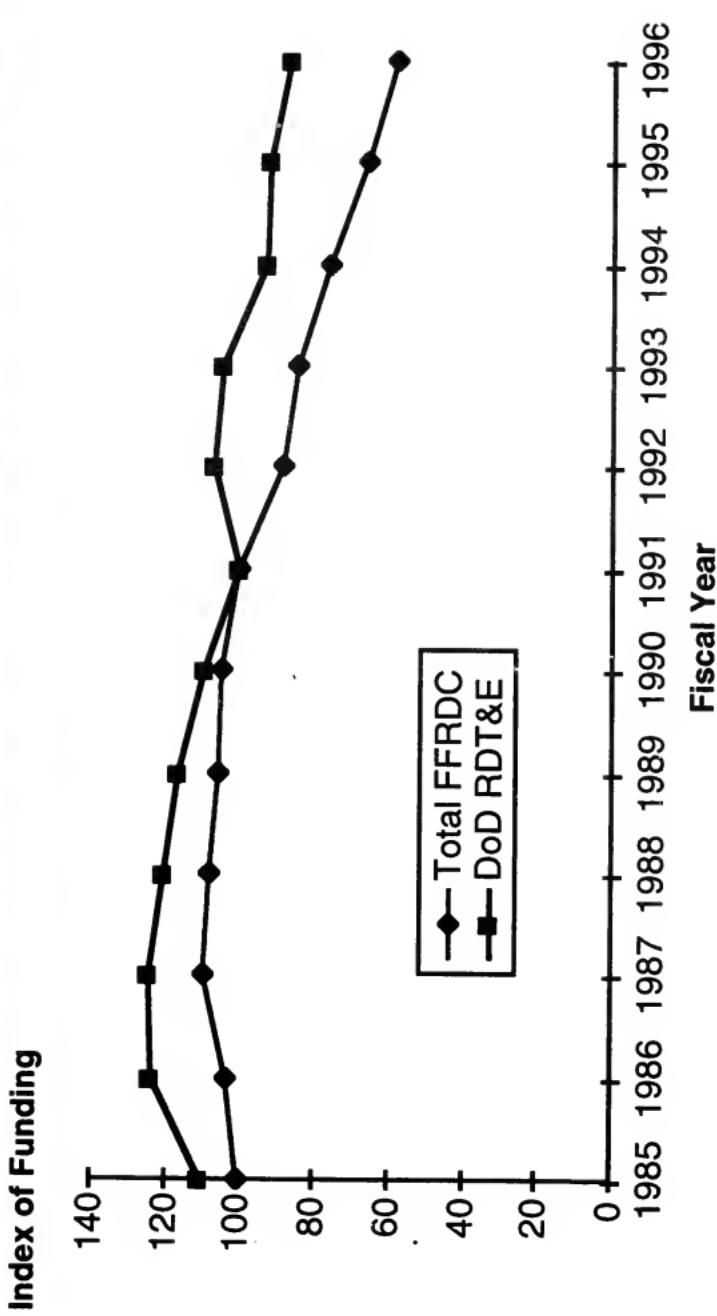
The work that they are doing in the future now involves the conceptualization design and development of technologies for advanced guidance and control, power plants, and propulsors for a ship self-defense system. In sum, this is a center of excellence for guidance and control applied to our advanced undersea weapons, our propulsors, and a center which has provided the concept and the demonstration of the key enabling technology for all of our advanced ship defense activity.

Next chart, please.

[The information follows:]



Indexes of Constant Dollar Funding FY 1991 = 100



Mr. KAMINSKI. As I go back also and look at the problems related to FFRDC's, I think that some of them stem from the perceptions of growth of the FFRDC's while the budget was growing and then the lack of decline of the FFRDC's when the budget was coming down. This chart shows in red the total DOD RDT&E budget and then, in blue, the total FFRDC portion of that budget. And to normalize the curve, I just set 100 being whatever the two figures in 1991, so you see the intersection of the two curves in 1991. And as I look at the history here, what you can see in red was the DOD RDT&E budget growing, peaking about 1986 and 1987. You see also the FFRDC's, the blue curve, growing over that same period. And then, as the budget came down, coming all the way down through 1991, what you see is that the FFRDC's stayed relatively flat, and I think there were many concerns at this time that when industry in general was downsizing, why were not the FFRDC's downsizing at the same rate? Were they being some special treatment?

Well, as you can see what has happened since then, the overall RDT&E budget if I go to 1996 is down about 17 percent, and the sum total of funding for the FFRDC's is now down about 34 percent. That was done as a result of things done in the Department plus a result of annual cuts made by the Congress in the budget. And it is that overall adjustment that got our serious attention in the program, because we believe we are getting these institutions now down to the size where they might be coming below critical mass, and there are critical capabilities that the Department would perhaps lose.

Next chart, please.

[The information follows:]

Management Actions Taken

- Limited the program content to “core work”**
- Established stringent criteria for non-core work by an FFRDCs parent corporation**
- Chartered an independent advisory committee to review the Department’s management and oversight of FFRDCs and UARCs**
- Developed a new set of guidelines to ensure that the management fee provided to FFRDCs is based on justified need**

Mr. KAMINSKI. The management actions that were taken in response first were to define this concept of core work. That work which was defined by each sponsor which, based on the strategic relationships, the long-term relationships that were required between the Department and the supporting institutions, a long-term relationship based on a knowledge of the operation, based on proprietary data in many cases, based on a special understanding, and that coupled with the core competencies of the organizations. This core concept, I think, has now been well established, but it is something we will continue to refine over time as we get smarter and we see where the directions will be taking us in core.

As we applied this core concept, we identified for the FFRDC's about \$43 million that we felt went beyond core. We are in the process of removing that work from the FFRDC's. And we found also about \$26 million of work in the university-affiliated research centers that did not meet the definition of core which work also is being removed from these centers. We have also established stringent criteria for noncore work by an FFRDC's parent organization. These are very broad and stringent standards for the FFRDC's that are established in the basic contracting arrangement. These are the arrangements which I believe were fundamental to the decision made by the Mitre Corp. to split its FFRDC work from its non-FFRDC work. It was not compatible to do non-FFRDC work within the same corporation under the rules we had established. There were sufficient teeth in those rules to cause the corporation to have to decide one of two things: either to stop that work or to split that work out into a separate corporate entity from the FFRDC's with no attachments between the two, and they decided to do the latter.

The limitations for noncore work are much more narrow for UARC's, and that narrowness is appropriate given the broad research base that often is done by the parent institution. There, the limitations are designed to deal with potential conflict situations so they can be more narrow in scope. We have also chartered an independent advisory committee to review the Department's management and the oversight of our FFRDC's and university-affiliated research centers. We want this independent, separate source of advice because there are times when I feel we have an internal conflict in the Department of Defense about managing these institutions, and I think it is prudent for us to have an outside source of advice and review to maintain the discipline that we need in the core concept. This independent review group of the DSB is chaired by Gordon England, who, prior to his retirement, had run the Fort Worth operations of Lockheed. We have also developed a new set of guidelines to ensure that the management fee provided to FFRDC's is based on a justified need, and as I said, those are now in formal coordination in the Department; we expect to have those out by April this year.

Next chart, please.

[The information follows:]



Summary

- FFRDC/UARCs are sized consistent with defense acquisition reform, strategy & budget
- Strengthened management controls are in-place
 - “Core” concept implemented to improve discipline and consistency in selecting appropriate work
- Sponsors oversight and stringent criteria for non-FFRDC work address concerns of “parent growth”
- MITRE Corporation split addresses long-time concerns of both the Congress and the private sector

Mr. KAMINSKI. If I might summarize, Mr. Chairman, my conclusion is that the FFRDC's are needed organizations. They are critical organizations to the Department, and as well as the UARC's, they provide high-quality, high value-added contributions to the Department. We believe we have now sized the FFRDC's and the UARC's using a consistent approach defined around core, and they are size-consistent with our defense acquisition reform strategy and our budget. We believe we have now put in place sufficient strengthened management controls to supervise these activities, and we have implemented this core concept to improve discipline and consistency in selecting appropriate work for the FFRDC's and the UARC's. Sponsor's oversight and very stringent criteria for non-FFRDC work address the concerns that were expressed earlier about parent growth, and, in fact, these issues, as I said earlier, have led to the Mitre Corp. splitting the corporation into two lines of business, addressing some of the long-term expressed concerns about this growth of the parent business.

As a final element, my request to the Congress is to allow the Department to apply this core approach to management and to move away from the imposition of annual ceilings on our FFRDC's and UARC's as a collection of activities. These are ceilings that are not generally applied to any other class of business, and we believe we have in place today a core approach which should eliminate the need for the annual imposition of ceilings.

Thank you very much, Mr. Chairman.

[The prepared statements of Mr. Kaminski and Mr. Douglass follow:]

Embargoed Until Released by the
House Committee on National Security

Statement of

**The Under Secretary of Defense for Acquisition and Technology
Honorable Paul G. Kaminski**

**Before the
Subcommittee on Research & Development
of the
House Committee on National Security**

on

DoD-Sponsored R&D Centers

March 5, 1996

Embargoed Until Released by the
House Committee on National Security

Mr. Chairman, members of the subcommittee, and staff, thank you for the opportunity to appear before you today to discuss the specifics of the Department's initiatives to strengthen the management and focus of our federally fund research and development centers (FFRDCs) and university affiliated research centers (UARCs).

We are taking these actions to deal with concerns, both real and perceived, that these centers have not been right-sized; that they are working in areas beyond the core interests of the Department; and that the centers are using their special status to gain an unfair competitive advantage over commercial firms. The Department has scrutinized the operations of our FFRDCs and our University Affiliated Research Centers over the past year. We have conducted numerous independent studies and reviews and we have now introduced four major initiatives designed to manage these organizations more effectively, including

- Limiting the program content of these R&D centers to "core work;"
- Establishing stringent criteria for the acceptance of non-core work by an R&D center's parent corporation;
- Chartering an independent advisory committee to review the Department's management and oversight of FFRDCs and UARCs;
- Developing a new set of guidelines to ensure that the management fee provided to FFRDCs is based on justified need.

We believe these initiatives, along with the support of Congress, will effectively address concerns about FFRDC and UARC management and are paving the way for continued use of the critical capabilities provided by these centers. As the Department downsizes, they have become increasingly important as centers of independent technical expertise and support.

FFRDCs

For nearly a half century, the Department has invested heavily in the growth of a strong research and development establishment within the United States to help sustain the technological supremacy of U.S. forces. Today, the Department of Defense (DoD) sponsors 12 not-for-profit, federally funded research and development centers (FFRDCs) to accomplish the following:

- Maintain long-term strategic relationships with their sponsoring DoD organizations;
- Perform research, development and analytic tasks integral to the mission and operations of sponsoring agencies within the DoD;
- Maintain "core" competencies in areas important to the DoD sponsors and employ these competencies to perform high quality, objective work that cannot be carried out as effectively by other organizations; and
- Operate in the public interest, free from real or perceived conflicts of interest.

Three different types of FFRDCs have evolved over time to help the Department accomplish its mission. Seven studies and analyses (S&A) centers provide DoD decision makers with objective evaluations of complex issues. Two systems engineering and integration (SE&I) centers provide experienced engineering and technical support to several DoD research and engineering centers. And finally, three

research and development (R&D) centers execute key, leveraging basic research and advanced development programs in support of their DoD sponsors' material development missions.

7 Studies & Analysis Centers

RAND NDRI
RAND Arroyo
RAND Project Air Force
Center for Naval Analysis (CNA)
Logistics Management Institute (LMI)
Institute for Defense Analyses (Studies & Analysis)
Institute for Defense Analyses (OT&E)

2 Systems Engineering & Integration Centers

MITRE C3I
Aerospace Corporation

3 Research & Development Centers

MIT Lincoln Laboratory
Institute for Defense Analyses (C3I)
Software Engineering Institute (SEI)

FFRDCs have played a key role in this nation's defense since World War II. For example, MIT's Lincoln Laboratory was originally formed in 1952 to build a prototype air defense system against Soviet attack. By the late 1970's, Lincoln Laboratory's extensive experience and "core" competencies in radar clutter phenomenology, measurement and data analysis played a key role in the successful development of U.S. cruise missile systems capable of penetrating Soviet air defenses. This expertise also provided a foundation of knowledge critical to establishing the models and simulations needed for employment of low observables systems such as the F-117.

Similar contributions have been made to this nation's defense over the years by each of the seven studies and analysis FFRDCs. In 1956, the Institute for Defense Analyses (IDA) was formed to help key decision makers in the office of the Secretary of Defense address important national security issues, particularly those requiring scientific and technical expertise. Over the past year, IDA analysts have been instrumental in providing independent, objective assessments of the Department's heavy bomber force needs; a comprehensive tactical utility analysis of the C-17 and Non-Development Airlift Aircraft; and an ongoing study of deep attack weapon systems.

And finally, the Aerospace Corporation--a system engineering and integration center--was founded in 1960 to provide the U.S. Air Force with the technical support needed to acquire and operate space systems, including the related launch and ground systems. Over the past 10 years, the Aerospace Corporation has conducted independent launch readiness verification assessments for over 94 space launches and achieved a 98 percent launch success rate, compared with an 80 percent success rate for U.S. commercial launches over the same period.

UARCs

In addition to the FFRDCs, the DoD sponsors six not-for-profit, private and state university integrated laboratories that:

- Maintain long-term strategic relationships with their DoD sponsoring organizations;
- Receive DoD sole-source funding in excess of \$2 million annually to establish/maintain essential research, development and engineering capabilities defined as "core" (contract funding awarded under the authority 10 U.S.C. Section 2304(c)(3)(B), that allows the use of non-

competitive procedures in order to establish or maintain an essential engineering, research, and/or development capability); and

- Operate in the public interest, free from real or perceived conflicts of interests.

Each of the DoD sponsored university affiliated research centers, like the FFRDC research and development centers, perform basic research, design and development activities in support of their DoD sponsor's missions.

6 University Affiliated Research Centers

- Johns Hopkins University Applied Physics Laboratory (APL)
- University of Washington Applied Physics Laboratory (APL)
- Pennsylvania State University Applied Research Laboratory (ARL)
- University of Texas Applied Research Laboratory (ARL)
- Utah State University Space Dynamics Laboratory (SDL)
- Georgia Tech Research Institute (GTRI)

The UARCs have maintained a long-term relationship with their DoD sponsor and have contributed greatly to the nation's defense needs. Johns Hopkins University APL—the largest of the DoD sponsored UARCs— invented the concept of satellite navigation that has led to modern global positioning capabilities. Johns Hopkins also played a pivotal role in inventing, developing and prototyping the Navy's Cooperative Engagement Capability (CEC)—a technological and operational breakthrough that shares information between battle groups in real-time, so that an entire battle group can fight and respond to threats as a single, integrated combat system.

Penn State University ARL is responsible for the design of 21 advanced propulsors and hydrodynamics devices for Navy surface ships, submarines, and

torpedoes. PSU ARL conceptualized and demonstrated the key enabling technologies and supporting research for advanced ship self-defense decoys.

The University of Washington APL solved the torpedo influence exploder problems that had plagued Navy torpedoes and is currently directing research at understanding the physics of ocean processes to better predict the performance of underwater systems.

The University of Texas ARL developed the ground station equipment used to track TRANSIT (navigation) satellites and is building the prototype of the MAXUS sonar which will replace mine avoidance sonar on attack submarines.

Utah State University SDL designed and built the Midcourse Space Experiment's SPIRIT III telescoped infrared sensor and functionally demonstrated the feasibility of a Space Based Infrared (SBIR) low earth orbit surveillance concept, now in development as part of the Space Missile Tracking System (SMTS).

The Georgia Tech Research Institute designed and constucted the world's largest Compact Antenna Test Range for the US Army. The range has allowed the Army to map and test microwave antenna patters installed on vehicles as large as the M1 Tank which greatly enhanced the ability to reduce interference and maximize performance.

IMPORTANCE OF R&D CENTERS

The core work that our centers perform is vitally important to our national security. Over the past year, the Department has carefully reviewed its relationships with FFRDCs and UARCs. I formed a senior level DoD Advisory Group to examine the issue, and chartered an independent review by a Defense Science Board task force of the Department's FFRDC management and employee compensation practices. The

primary question I posed to both groups was: Do we still need these organizations? The answer was a clear and emphatic "yes."

The Defense Science Board felt that "...the FFRDCs should be retained on the strength of their quality and the special relationships they have with their sponsors on matters which are of great importance to the Department of Defense." Our internal Advisory Group reached a similar conclusion after reviewing alternatives to FFRDCs and UARCs. The bottom line is that we believe—and this belief is held widely in the Department, both by civilian and military leaders—that FFRDCs are doing high-quality, high-value technical and analytic work that could not be provided as effectively by other means. Let me assure you that the people who complain about FFRDCs are not the users of their services or the recipients of their products. FFRDCs and UARCs are doing their jobs for DoD and doing them well.

The essence of their value to DoD lies in the qualities that I mentioned previously, starting with the long-term strategic relationship FFRDCs and UARCs maintain with the Department. I might note that this is one area where DoD has been in front of the commercial sector in its acquisition practices. Successful commercial firms are moving increasingly toward establishing long-term, strategic relationships with trusted suppliers. They have found the result is often a higher quality product, at lower overall costs, in contrast to the previous practice of changing suppliers based on low bids. DoD has long realized this benefit from FFRDCs and UARCs.

I am not arguing that competition is inappropriate. The Department uses competitive processes to obtain the overwhelming majority of the goods and services it requires. But there are some circumstances and some kinds of work, for which the value provided by a strategic relationship outweighs the potential gains of competition.

STRENGTHENED MANAGEMENT PRACTICES

I also asked the DoD Advisory Group to assess the management of FFRDCs and UARCs, and as a result of this review I approved a "DoD Management Action Plan" to ensure the most effective and prudent use of the centers while providing measures to guard against misuse. I forwarded that plan to Congress in May 1995. Since that time, we have introduced a number of initiatives designed to manage these centers more effectively. I will describe four that I believe to be the most important.

First, we have implemented a "core" work concept for managing the workload of the FFRDCs and UARCs. This core concept is what I would describe as a "stick to your knitting" approach in terms of maintaining the capabilities and competencies that are at the core of the strategic relationship. In doing this, each FFRDC/UARC sponsor developed a statement defining what is core work for each center. In addition, each sponsor developed and applied specific core criteria to ascertain whether a task is within the scope of the core statement. These criteria were applied to all ongoing fiscal year 1995 work and to each proposed task submitted for fiscal year 1996. As a result of the program assessment, sponsors identified a total of about \$43 million as non-core in the FFRDCs and about \$26 million in the UARCs. These non-core tasks have been, or will soon be, transitioned out of the centers in a logical way and be offered to the non-FFRDC private sector, as applicable.

Second, we have established stringent criteria for the performance of non-FFRDC work by the center's parent corporation. Basically, all non-FFRDC work is subject to sponsor review and/or approval and it: (1) must not detract from the performance of FFRDC work, (2) must be in the national interest, (3) must not undermine the independence, objectivity or credibility of FFRDC work, and (4) may not be acquired by taking advantage of access to or information available to the parent through its FFRDC/UARC.

Third, we have an Independent Advisory Committee (IAC), with membership of highly respected people from outside of the Government, to review and advise on the Department's management and oversight of its centers. The IAC has already begun its work and is expected to submit the first report this summer.

Fourth, we developed a revised set of guidelines to ensure the management fees provided to our FFRDCs are based on need and FFRDC provided justification. The new fee guidelines will recognize that FFRDCs, like other defense contractors, incur business expenses that are not allowable charges to their contracts but are instrumental in providing FFRDCs the flexibility to remain centers-of-excellence and sustain successful, high quality operations. However, the new guidelines are expected to reduce the amount of fee, through elimination from fee costs that are reimbursable, and tighter controls of costs that are non-reimbursable, but considered ordinary and necessary.

CORE WORKLOAD

Together, FFRDCs and UARCs account for about 4.8 percent of the President's fiscal year 1996 RDT&E budget request (about \$1.7 billion of a total \$34.9 billion). Funding for our FFRDCs has come down since the peak levels in fiscal year 1991 at about twice the rate of the overall decline in the Department's RDT&E budget. Another ten percent of the RDT&E budget goes to in-house labs, and the remaining 86 percent goes to industry mostly via competitive processes.

At this point, it is important to underscore that FFRDCs cannot compete by Government-wide regulation and UARCs are precluded by contract from competing for a majority of the 86 percent. It would be inappropriate for organizations with the high level of access to information and close sponsor working relationships maintained by FFRDCs and UARCs to compete with other firms that do not share this same level of access.

Given the mission of the FFRDCs and UARCs, staff years of technical effort is the best measure for core workload. For FFRDCs, the Director, Defense Research & Engineering (DDR&E) will annually determine how many staff years of technical effort are required by each center based on several factors, including sponsor needs and the guidelines for determining workload for each category of FFRDC. These guidelines, to be applied by the FFRDC sponsor in projecting workload and funding requirements for each category are:

- **Studies and analyses (S&A) centers** shall maintain a relatively stable annual-level-of-effort in order to support core competencies important to their sponsors and to avoid the loss of continuity and expertise that arises from major changes in staff levels. Their core workload will focus on the kinds of work that cannot be as effectively performed either in-house or by other private sector resources.
- **Systems engineering and integration (SE&I) centers** shall maintain a long-term, stable core competency when the sponsor has determined that no in-house or other private sector capability exists to perform the requirement as effectively. SE&I staffing levels will respond to changes in workload and funding consistent with the trend in the most relevant portions of the DoD budget (R&D and/or procurement) supporting the types of programs/systems within the FFRDC mission area.
- **Research and development (R&D) centers** shall maintain the technical expertise and related core competencies necessary to address those essential requirements, priorities and objectives of the FFRDC sponsors, the applicable DoD advisory/oversight group and the DDR&E.

From the annual workload requirements provided by the sponsors, the DDR&E will allocate a dollar funding level for each center and maintain a five-year projection for planning purposes. Requests for deviations from or exceptions to established annual funding levels will be submitted for resolution by the FFRDC sponsor, with appropriate justification to the DDR&E.

The process for UARCs is similar to the above, with its focus on ensuring that annual staff years of technical effort at each UARC represents those essential engineering, research, and/or development capability defined in the core statement and awarded non-competitively per 10 U.S.C. 2304(c)(3)B.

As I earlier mentioned, funding for our FFRDCs has been on the decline since fiscal year 1991. This decline has been consistent with the overall trends in defense downsizing and outsourcing. Its consistent with the trends in taking down the force structure as well as the overall budget. I believe we now have reached steady state conditions, and that further reductions beyond the core levels planned for fiscal year 1996 jeopardize the retention of essential core capabilities, and therefore, would be harmful to our national security interests.

FISCAL CEILINGS

The Department has responded to Congressional direction from previous years. We are applying more management attention to FFRDCs, and we intend to continue doing so in the future. Our management processes involve senior leadership of FFRDC sponsoring offices—some of whom are with me today—with broad oversight provided by my office. The Independent Advisory Committee will provide the Department with an independent assessment of its management activities. The FFRDC program is now among the most intensely scrutinized and overseen in the Department.

In sum, the Department has gotten the message. We have implemented management reforms, and it is now time to restore the normal process for fiscal oversight of FFRDCs and UARCs. Accordingly, we are requesting the four Defense Committees to discontinue the practice--started a few years ago--of inserting special language in annual Bills to limit DoD spending at FFRDCs and UARCs. Such measures are no longer needed, and they constrain unnecessarily DoD's ability to use FFRDCs and UARCs for appropriate work. Let me offer two examples.

First, Lincoln Laboratories--one of our research FFRDCs--must frequently buy advanced components from industry for demonstrations and prototypes in support of Defense programs. These technical subcontracts are in addition to the funding required to support laboratory personnel and ongoing research. Given the continuously decreasing fiscal ceilings provided by Congress, we could only fund these technical subcontracts by reducing some other part of the laboratory program, or by cutting another FFRDC. Neither alternative is desirable.

Second, several FFRDCs are being called upon for technical assistance and analytic support for our Bosnia deployment. These efforts were not planned at the beginning of the fiscal year, and to make room within the fiscal ceilings, we would have to defer other needed FFRDC work. Again, this is not desirable, and it is not good management practice.

As an interim measure for fiscal year 1996, I ask that the Committee support an amendment to the Appropriations Bill that exempts the following FFRDC expenditures from counting against the fiscal year 1996 FFRDC ceiling: (1) major procurements from industry for demonstrations and prototypes; and (2) technical assistance and analytic support for our Bosnia deployment.

My general point is that no overall fiscal ceilings are imposed on any other class of DoD contractor. In all other cases, the Department is free to select the best mix of contractors to meet our changing needs, consistent with program priorities and

funding provided by the Congress. The additional constraints on DoD FFRDCs and UARCs are not required. They inhibit the Department's ability to allocate resources flexibly to get the most efficient mix of technical and analytic support. I would appreciate the Committee's support in allowing DoD to manage its FFRDCs without externally imposed fiscal ceilings.

MITRE RESTRUCTURE

On a separate, but related issue of high interest, I want to reiterate the Department's general support for the MITRE Corporation's split into two separate, non-affiliated companies, with no common Trustees, officers or staff. The "MITRE Corporation" will continue to operate its two existing FFRDCs (the C3I FFRDC for DoD and the Center for Advanced Aviation System Development FFRDC for the FAA). The new entity will be a not-for-profit corporation formed out of the two non-FFRDC divisions from the old MITRE.

The Department believes that the split will focus the MITRE Corporation on its FFRDC operations and neutralize any concern about the use of FFRDC status to gain unfair advantage over commercial firms. The Department did not specifically mandate the split, but it did establish firm new rules regarding non-FFRDC activities, and the split was MITRE's response.

SUMMARY

To summarize the Department's initiatives to strengthen FFRDC and UARC management:

- The work content and the operations of each of these centers have been closely scrutinized over the past year. FFRDCs and UARCs are sized consistent with essential sponsor requirements, defense acquisition reform initiatives, strategies and budgets.

- We have strengthened our management controls, including managing the workload of our centers to the core concept; transitioning ongoing work that is non-core out of the centers; and developed consistent management fee guidelines.
- We have established new stringent criteria for the performance of non-FFRDC work by the parent corporation of an FFRDC.
- The “Independent Advisory Group” is operating as a source of judgment to help communicate to the Congress and the public the adequacy of DoD management actions

In closing, let me underscore my own sense and that of the entire team here.

The FFRDCs and UARCs are critically important national assets. They have provided key contributions in the past and will address critical needs now and in the future. Proactive management on the part of the Department will ensure the sustainment of these contributions. These assets are the kind that take a long time to develop and their long-term care is of the utmost importance to all of us—we need the Congress’ continued support.

Mr. Chairman, thank you for this opportunity to report on the DoD-sponsored FFRDCs and UARCs.

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HOUSE COMMITTEE ON NATIONAL SECURITY
MILITARY R&D SUBCOMMITTEE

STATEMENT OF
JOHN W. DOUGLASS
ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, DEVELOPMENT AND ACQUISITION)
BEFORE THE
SUBCOMMITTEE ON MILITARY RESEARCH AND DEVELOPMENT
OF THE
HOUSE COMMITTEE ON NATIONAL SECURITY
MARCH 5, 1996

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HOUSE COMMITTEE ON NATIONAL SECURITY
MILITARY R&D SUBCOMMITTEE

Mr. Chairman, members of the Committee, I appreciate this opportunity to describe the critical role that the Center for Naval Analyses (CNA) and the University Affiliated Research Centers play for the Department of the Navy.

As many of you are aware, I was a staff member to the Senate Armed Services Committee. A part of my staff portfolio included Federally Funded Research and Development Centers, or FFRDCs, and University Affiliated Research Centers; therefore, I appreciate the importance of the role that this Committee plays in ensuring adequate oversight of FFRDC and University Affiliated Research Center issues. The transition from Congressional staff member to my present position with the Department of the Navy has allowed me to broaden my experience and to appreciate the users view of FFRDCs and University Affiliated Research Centers. I am convinced, now more than ever, of the critical role these organizations play in the Navy's ability to meet its national security responsibilities.

I would like to first discuss the Navy's affiliation with the FFRDC community. There are three types of FFRDCs, (1) Systems Engineering and Integration centers, such as MITRE and Aerospace Corporation; (2) Research and Development Centers, such as Massachusetts Institute of Technology's Lincoln Laboratory; and (3) Studies and Analysis Centers, such as the Navy-sponsored Center for Naval Analyses (CNA). While the Department to some extent relies on all three types of centers, I will focus on CNA because it is the only FFRDC the Department of the Navy sponsors.

The mission of Studies and Analysis FFRDCs is to provide independent and objective analyses and to advise in "core" areas important to their sponsors in support of policy development, decision making, alternative approaches, and new ideas on major defense issues. By their very definition FFRDCs are not allowed to perform work that can be carried out as effectively by commercial, other non-profit, or in-house resources. Studies and Analyses Centers have not been a source of major concern in recent discussions concerning the role of FFRDCs. In fact, the studies and analysis type FFRDCs have been singled out for continued support in a number of reviews. Their strict avoidance of any type of conflict of interest assures their objectivity and facilitates "long term strategic relationships" with their sponsors.

The Navy created the Center for Naval Analyses (originally called the Anti-Submarine Warfare Operations Research Group) in 1942 when experts were required to address the submarine threat to Allied shipping. From its earliest efforts in convoy design

and development of patrolling patterns for anti-submarine warfare to its current operation, which includes deployment of CNA analysts with NATO forces in Bosnia, CNA has proven an invaluable source of expertise. The Center's program of providing on site skilled analysts to major naval commands throughout the world has allowed CNA to immediately address fleet issues in real-time and ensure the current operational knowledge of their analysts. The Department of the Navy has no comparable in-house analytical capability of the type offered by CNA. The breadth of knowledge and expertise possessed by CNA analysts combined with the Department of the Navy's own downsizing efforts make CNA the only viable source for meeting critical analytical needs.

The Navy has been at the forefront in leading FFRDC management reforms. Among the steps taken were a comprehensive review of CNA's work to ensure it was within their core definition and introduction of a task order contracting arrangement which includes award fee provisions to provide incentives for cost efficiency, timeliness and quality of performance.

In summation let me say that throughout its long history CNA has played a vital role in the ability of the Navy and the Nation to meet its national security commitments. Their analysts are supporting Admiral Smith (our overall NATO commander in Bosnia) today - in Tuzla, Sarajevo and at sea in the Adriatic. Whether it has been developing ways to counter the threat of an enemy or developing new and better ways for the Department of the Navy to manage its resources more efficiently and effectively--CNA has been there.

Since the 1940's, the Department of the Navy has also built long-term strategic partnerships with numerous universities. These enduring relationships with University Affiliated Research Centers are still very important today for their support of scientific and engineering expertise in areas such as surface and undersea weapons research and development. The Department draws from the University Affiliated Research Centers an unbiased approach and innovative solutions fostered by their intimate knowledge of operating platforms and environments.

The Department of the Navy currently serves as the primary sponsor of four University Affiliated Research Centers, Johns Hopkins University's Applied Physics Laboratory, Pennsylvania State University's Advanced Research Laboratory, the University of Washington's Advanced Research Laboratory, and the University of Texas' Applied Physics Laboratory.

These four University Affiliated Research Centers are focused on critical mission areas of the Department of the Navy. A few examples include: the Applied Research Laboratory at Penn State which has been responsible for the design and development of all new operational torpedo propulsion systems; the Applied Physics Laboratory at the University of Washington is a key

provider of data acquisition and analysis for oceanographic environments critical to the use of undersea sensors and mine countermeasures; the Applied Research Laboratory at the University of Texas has been instrumental in acoustic sensor arrays and broadband techniques for detecting, tracking and classifying submarines and surface ships in the littoral environment; and, the Applied Physics Laboratory at Johns Hopkins provides continuing evaluations of the Trident fleet ballistic missile systems in areas of readiness and operational deployment.

There is no substitute for University Affiliated Research Centers. The work they perform--and the overall expertise and capabilities represented by these institutions--is not duplicated or available at in-house naval laboratories. These Centers are an essential part of the national security infrastructure, and are important to our ability to maintain technological superiority.

Much like the FFRDCs, University Affiliated Research Centers have been placed under intense scrutiny. The Department of the Navy once again has taken aggressive measures to address Congressional concerns. My predecessor, Ms. Nora Slatkin, commissioned Navy working groups to examine the core competencies in place at each University Affiliated Research Center. Additionally, the Department of the Navy has worked with its Centers to develop a core competency and capability definition for each Center. This allows a more thorough assessment of the appropriateness for assigning work.

I believe the Department of the Navy has performed a thorough scrub of its University Affiliated Research Centers contracting relationships, eliminated work that could be best performed by others, and left in place only that work which requires the strategic relationship associated with the Centers. I am very happy to be able to report that the new management approach that Dr. Kaminski has instituted - one that permits sponsors such as the Navy to propose for his review and approval the manning levels that we think are required to meet our needs - is precisely the right approach.

In summary, these institutions represent essential capabilities woven into the fabric of the Department of the Navy. Finally, I would be remiss if I didn't take the opportunity to pay tribute to Bill Andahazy of the Committee's staff for his valued insights into FFRDC and University Affiliated Research Centers issues. I valued the good relationship we enjoyed when we served as colleagues on Authorization Committee staffs. Bill's good judgment and forward thinking always helped us to make progress. The excellent relationship we built while serving together continues today.

Mr. WELDON. Thank you, Dr. Kaminski. We will reserve our questions until the entire panel has testified.

Our next witness is Mr. Pete Aldridge, president and CEO of the Aerospace Corp. Pete, welcome to the committee.

**STATEMENT OF EDWARD C. "PETE" ALDRIDGE, JR.,
PRESIDENT AND CEO, AEROSPACE CORP.**

Mr. ALDRIDGE. Thank you, Mr. Chairman. It is a pleasure to be here. I am delighted to be here today as a matter of fact and respond to your request for information about the Aerospace Corp. and the federally funded research and development center that it operates and to respond to any questions you may have. I, like Dr. Kaminski, have submitted a formal statement for the record and would like to have it entered, please.

Mr. WELDON. Without objection.

Mr. ALDRIDGE. I will summarize that statement for the committee this afternoon.

As Dr. Kaminski stated earlier, the Aerospace Corp. is a California nonprofit corporation formed in June 1960 to provide the scientific and engineering support for our Nation's national security space program. The corporation has operated an FFRDC as an activity under contract to the Air Force since 1960 to accomplish this mission. We work for both the Department of Defense and the non-defense clients on space and space-related technology and space systems development and acquisition. Our principal tasks, which are also defined as our core functions, are space launch certification, space systems of systems engineering, space system development and application, space acquisition process implementation, and space technology application.

We employ about 3,000 people across the Nation of which about 2,000 are technical staff. About 70 percent of this technical staff hold advanced degrees. Our FFRDC funding allocation in fiscal year 1996 is \$306 million or about 2 percent of the total DOD spending for military space systems.

I appreciate you asking me to specifically talk about the value added by our special arrangement with the DOD and our sponsor, the U.S. Air Force. This is the most important question concerning FFRDC's today, and I have very strong views about the answer. Having been on both sides of the aerospace FFRDC, I was a recipient of the FFRDC technical services during my tenure as Undersecretary and Secretary of the Air Force and have been Aerospace's leader for the last 4 years.

The characteristics of Aerospace and its FFRDC are truly unique. We focus on space and space-related mission success through our cradle-to-grave technical responsibilities for all major DOD satellite launch and ground system programs. Our contribution is measurable and highly visual. Where we have been involved, the success rate is 96 percent. Where we are not involved, such as commercial space launch and operations, the success rate is 80 percent. There is a fundamental difference in philosophy, dedication, and competence that causes this difference in mission success, and I firmly believe that it is the Aerospace Corp. that makes this difference.

We can achieve this difference in mission success, save billions of taxpayer dollars, and accomplish our responsibilities in four

ways: first, through stability and corporate charter emission. We have been doing this job and only this job for 35 years. We have learned a lot of lessons from a lot of programs, and we avoid repeated mistakes. Second, we maintain world-class technical excellence in the many disciplines required to meet the highly technical demands of space. Our corporate memory concerning the military space program, its problems and its successes, is second to none. Third, we are independent and objective and focus exclusively on what is in the best interests of the Government. We are nonprofit; we do not compete for Government programs; we do not manufacture hardware, and we remain free from any conflict of interest. These principles are the foundations of the Aerospace operations. Fourth, and most important, we are trusted members of the space development and operations team. We are physically there in the program office and the ground station at the launch site every day performing our systems engineering and integration tasks. This is where the real value added of by Aerospace becomes evident and is most appreciated by our customers.

Because we have technical staff in almost every phase of every space program, we can use information gained in one area when problems arise in another. I call this horizontal engineering. If any one of my engineers learns of a problem with a space systems component, our organizational structure permits that knowledge to be immediately passed to all space system programs in DOD and even to some of the civil and commercial space programs. Our operational approach ensures constant crosstalk and technology-sharing across multiple programs.

I want to emphasize that such sharing of information cannot be achieved among the for-profit contractors because of the competitive nature of their relationship and the fact that they typically work on one or two programs. Because we are not, and cannot be, in competition for any future program and because we have access to proprietary data from all contractors, we can make sure that the Government does not spend precious tax dollars solving the same problem over and over again.

There are many examples of how this breadth and depth of Aerospace support has saved billions of dollars, and I said billions, not millions. Our customers have stated that they believe that Aerospace is responsible for generating savings to the Government of about \$2 billion a year, a 7-to-1 return on investment. Last year, that number was \$3.6 billion.

We believe our mission is critical. As Lt. Gen. Les Lyles, commander of the Space and Missile Systems Center, stated to the Defense Science Board, Aerospace is SMC's systems engineering arm. Systems engineering is a central part of space systems development, acquisition, and operations, and ensures that the American taxpayer is receiving the highest value possible in their investment in space. General Lyles further stated that the Air Force space systems workload is increasing while Aerospace has gotten almost 30 percent smaller since 1991. This has created a sizeable gap between the Air Force requirements and our ability to deliver the necessary technical support.

In light of the growing workload in space, continuing operations of our older systems, increasing launch rate, and competition for

new systems, the downsizing we have experienced has been painful. We no longer perform many of the important tasks that, in fact, has increased the risk to mission success in space. In the business where the initial prototype is expected to work flawlessly for up to 10 years, accepting additional risk is not in anyone's interest. We cannot go to a test range and fix problems with our launch vehicles or satellites. The first flight of a satellite is like the first flight of a new military airplane being a full combat mission.

I also worry about reaching a critical mass where we can no longer sustain the depth and breadth of experience in our staff that our customers demand. We are beginning to see undesirable staff turnover as bright, young engineers leave the company because of uncertainty about the future. Without the infusion of new talent, we cannot maintain currency with new technology; our understanding of commercial space developments; and our leadership position in space.

The Aerospace Corp. today is smaller, leaner, and more cost-conscious than ever. Like the entire defense community, we have reduced costs everywhere we can to deliver the maximum technical staff to the customer: the DOD, the Air Force, and the Nation. We have reduced the average cost for a member of the technical staff for 8 consecutive years. We have lived in an intense spotlight of Government scrutiny with no evidence of inappropriate actions for the past several years. The net result of all of the internal and external reviews of FFRDC's has been solid confirmation of the importance and value of our role and mission.

I applaud Dr. Kaminski's management efforts to resolve the FFRDC problems. As I have met with members and staff over the past several years, your chief complaint was that DOD was not showing that it was managing the FFRDC's and that the DOD was not being responsive to congressional requests for information about FFRDC operations. Today, Paul Kaminski is aggressively managing DOD FFRDC's and has a plan that will ensure that the FFRDC's are operated in a manner consistent with the congressional concerns. He has developed a definition of core work for each FFRDC that is consistent with its mission, its core competencies, and the special relationships that exist with their sponsor. He has directed that no work can be accomplished with an FFRDC that does not meet these criteria.

I strongly urge the committee to accept Dr. Kaminski's proposals to manage FFRDC's by workload rather than artificial ceilings and to remove other restrictions that prohibit us from serving the taxpayer as well as we can. You trust the program managers within DOD to plan for, to budget for, and deliver their programs according to the mission needs and congressional approval. You should likewise trust the program managers and the DOD leadership to appropriately determine workload requirements for FFRDC's in competition with other demands for DOD resources as is done in every other DOD activity.

The artificial congressional ceiling forces us to offload people and skills regardless of the demands for our services and regardless of what Congress has demanded for the program content. Dr. Kaminski's proposal would fix this problem and provide a consistency in the congressional approval process.

Mr. Chairman, we are proud of our company and of our direct relationship to the success of our Nation's space program, which I believe is the best in the world. The mission for Aerospace is to keep it that way.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Aldridge follows:]

Testimony of Mr. Edward C. (Pete) Aldridge Jr.

President and CEO, The Aerospace Corporation

Before the House National Security Committee

Subcommittee on Military Research and Development

Honorable Curt Weldon, Chairman

March 5, 1996

Mr. Chairman, distinguished Subcommittee members and staff:

I am pleased to have the opportunity to describe the contribution made to our national security space program by the Aerospace Corporation's FFRDC, and to support Dr. Kaminski's plan for the management of the DoD FFRDCs and their core contributions to national security. I believe that the value added to the DoD space activity by Aerospace epitomizes the critical strategic role that a Systems Engineering FFRDC should play in helping to define and implement technically sound and cost-effective solutions to our military space requirements. I would like to discuss in order the Subcommittee's main questions as outlined in the invitation letter: (1) The nature of Aerospace work, the value added by our special relationship with DoD and why that relationship is necessary; (2) The efficacy of Dr. Kaminski's management plan and its impact on Aerospace; and (3) other issues arising out of our experience with the past five years of congressional DoD FFRDC ceiling reductions that may help to put the current plan in perspective.

1. The nature and value of the Aerospace FFRDC

The Aerospace Corporation is a private, non-profit California Corporation. It was created in 1960 at the recommendation of the congress and the Secretary of the Air Force to provide research, development and advisory services to the U.S. Government in the planning and acquisition of space, launch and ground systems and their related technologies. The key features of Aerospace operation, now codified in FAR as the definition of an FFRDC, are that we provide a stable, objective, expert source of engineering analysis and advice to the government, free from organizational conflict of interest; we are focused on the government's best interests, with no profit motive or predilection for any particular design or technical solution.

As its primary activity, Aerospace operates an FFRDC sponsored by the Air Force (Assistant Secretary for Acquisition, SAF/AQ), and managed by the Space and Missile Systems Center (SMC) in El Segundo, California. Its principal tasks are systems planning, systems engineering, integration, flight readiness verification, and operations support and anomaly resolution for DoD, Air Force and national security space systems. Through our comprehensive knowledge of space systems and our sponsor's needs, our breadth of staff expertise, and our long term, stable relationship with the DoD, we are able to integrate technical lessons learned across all military space programs and develop systems-of-systems architectures that integrate the functions of many separate space and ground systems.

Aerospace does not compete with industry for government contracts, and it does not manufacture products. The government relies on Aerospace for objective development of pre-competitive system specifications, and impartial evaluation of competing concepts and engineering hardware developments, to ensure that government procurements can meet the military user's needs in a cost-and-performance-effective manner.

Aerospace employs about 3000 people, of whom 2000 are scientists and engineers with expertise in all aspects of space systems engineering and technology. Seventy percent of them hold advanced degrees, with 28% holding a Ph.D. The average experience of Aerospace Members of the Technical Staff (MTS) is over 20 years. We recruit over half our technical staff from experienced industry sources, and the rest from new graduates, university staff, other non-profits, and internal degree programs and staff upgrades. Less than 6% come from previous government or military service, hired only by exception with my personal approval. I believe that this policy of strict review of any hiring from the government is essential to maintaining our independence and objectivity.

Aerospace has maintained a 35 year strategic partnership with the Department of Defense and the national security space community, developing a data and experience base that covers virtually every military space program since 1960. We have evolved an unparalleled set of engineering design, analysis and systems simulation tools, along with computational, diagnostic test and research facilities in critical space-specific disciplines that are used in day-to-day support of the government space system program managers.

As the government's management structure for national security space has evolved, Aerospace has been asked to broaden its support to include Space Command, the Army and Navy ,the DUSD(Space) and the DoD Space Architect, as well as NASA, NOAA and other government agencies and university projects whose systems and technology base intersects the DoD space mission. As the DoD moves toward more commercial parts, processes and standards, and toward joint use of commercial and international space and launch systems, Aerospace serves as the engineering link between DoD space missions and these other entities.

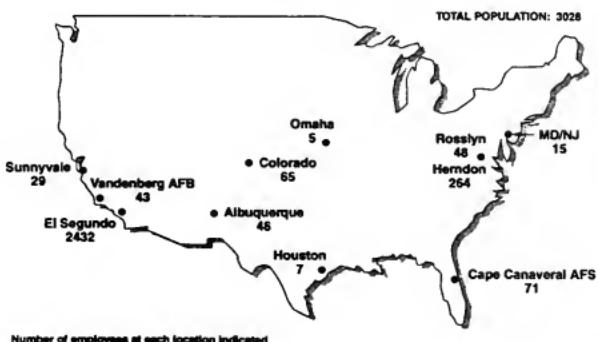
Aerospace is the government's integral engineering arm for national security space systems architecture and engineering. In much the same way that Wright Laboratories (an organic civil service organization) are the in-house Air Force engineering resource for aircraft development and acquisition, the Aerospace FFRDC (operated by a private corporation) serves as the government's

"in-house" engineering resource for military space systems. As such, Aerospace has broad access to intelligence information, government requirements development, all programs and contractors' proprietary data and processes, and the full scope of government program planning information. We translate the requirements dictated by congress and the military and national security management into engineering specifications that form the basis for competitive RFPs to industry. We evaluate contractor technical designs and performance, and provide continuing technical insight and progress assessment for the government program manager throughout the engineering development, test and initial operation phases of space systems. In order to do this, we must have technical experience and breadth at least the equal of the industrial firms we evaluate. I am extremely proud of the quality and performance record of our staff, as attested by the outstanding success record of the space launches and satellite systems Aerospace has managed technically on behalf of its Government sponsors.

All the DoD FFRDCs share a common set of operating definitions, and a common dedication to the national defense. But each serves a different function -- Studies and Analysis, Laboratory, or Systems Engineering and Integration. Each focuses on a different aspect of the DoD mission -- Policy, Air Defense, Software, Ground Systems, or Space Systems, for example, leading to different structures and operating modes.

Aerospace Locations

CY 1995 Year End



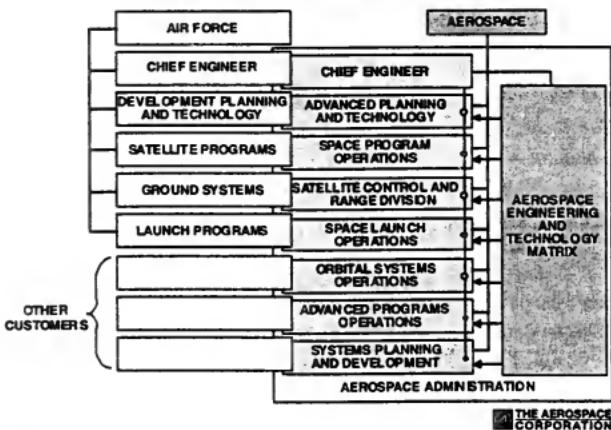
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THE AEROSPACE
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I would like to highlight for the subcommittee some essential distinctions between Aerospace and other DoD FFRDCs. Aerospace throughout its history has focused on space -- consistent with its original charter. We own the majority of our buildings and facilities, particularly the engineering

and scientific laboratories and their specialized equipment. As a systems engineering and integration FFRDC, we are an in-line part of the Air Force systems acquisition structure. Unlike many other FFRDCs, we do not maintain an arms-length relationship with our sponsor, living in separate facilities, accepting assignments and providing reports. Aerospace technical program management personnel are located side-by-side with their customers throughout the country, primarily at the SMC and Aerospace headquarters in El Segundo; in the Washington region with national security programs; and at the launch sites, satellite control stations, and space laboratory centers operated by our customers. (Equal overall numbers of Aerospace and Air Force personnel are housed in each others' facilities.)

Space System Acquisition Structure



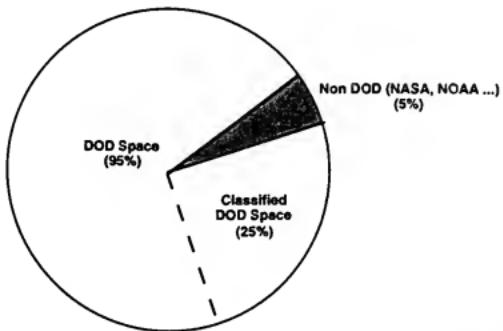
The Aerospace technical program office MTS are supported by a matrix of 1000 engineering and scientific specialists in every discipline relevant to space systems, with extensive laboratory and diagnostic facilities. Typically an expert in a particular field -- propulsion, microelectronics, or IR sensors, for example -- will work on several programs during the course of a year, as each has a need for a particular skill depending on its program phase. Thus lessons learned on one program are rapidly transferred to others, so that the best practices are made available to all DoD contractors, and expensive mistakes are not repeated by programs managed by different agencies, or using different contractors. This also permits Aerospace to develop and maintain state-of-the-art analytical and simulation models and test facilities that could not be afforded by a single program or contractor, but are efficiently utilized as needed by all programs.

Aerospace is the national leader in several space-specific technologies: space batteries, lubricants, microelectronics radiation damage, and military satellite communications systems operational simulation, among others. We have also developed world-class capability in space-related technologies with broader application, such as computer security.

Our activities are performed as part of a closely knit program team, and are critical to the day-to-day technical decisions made in acquisition, launch and operations. Aerospace performs launch readiness verification and signs off for almost all DoD boosters and satellites, and for key civil agency launches related to DoD systems and operations. No other FFRDC bears this level of responsibility for its sponsor's mission success. There are no taxi tests, no parts replacements, and no returns for repair -- the entire system must work 100% the first time, and for ten years thereafter.

The funding for the Aerospace FFRDC is the accumulation of the government-validated requests for MTS from over 180 individual space program managers and government agency customers; there is no annual line item appropriation for Aerospace. The sources of our funding are 49% from systems Procurement accounts, 43% RDT&E, and 8% O&M -- all from programs already authorized and funded by the congress.

**Aerospace Technical Effort
FY 95**

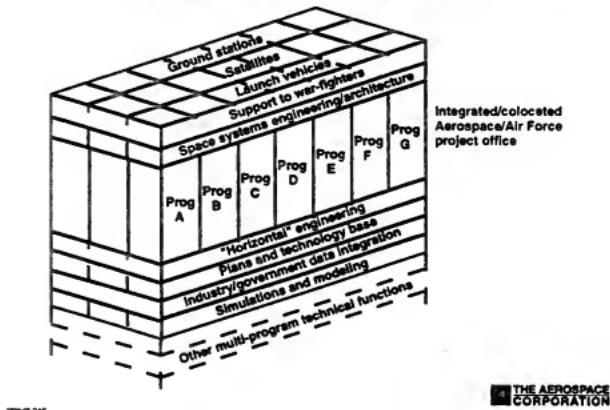


 THE AEROSPACE CORPORATION

In FY 1995, Aerospace received 95% of its funding from the DoD, and the remaining 5% from NASA, NOAA, and other non-DoD government and international agencies for space technology applications. The bulk of the NASA and NOAA launch and satellite work is managed through the

FFRDC contract, so that FFRDC activity comprises 98% of Aerospace work, and only 2% is in space-related applications for other customers.

Systems Engineering for National Security Space Depth and Breadth of Aerospace Support



Aerospace is the only national engineering resource with access to all DoD and national security space programs, their sensitive government data, and all of their contractors' proprietary concepts and methodology. Aerospace performs a unique function in developing the architecture of multiple interacting systems and the horizontal engineering integration of processes and lessons learned across all government space programs.

In the Air Force space systems acquisition team, each member has a defined responsibility: The Air Force project office directs the program and its contractors, and is responsible for all programmatic decisions including requirements, costs and schedules. Aerospace is the program's architect-engineer: it formulates system plans and concepts, assures feasibility and requirements satisfaction, independently analyzes problem areas, recommends acceptance or modifications, and verifies readiness. The prime contractor designs, builds, tests and operates the system; and SETA contractors provide acquisition support services in computers, database and configuration management, cost analysis, and functional support. Aerospace is prohibited by Air Force guidance from performing personal services or administrative support, or performing government functions appropriate to the government civil service and uniformed acquisition managers. Our very limited manpower focuses on the highest level engineering questions that affect program feasibility, cost-effectiveness, and risk.

Aerospace systems engineering currently supports 23 satellite programs, 9 boosters, and 9 ground station elements for DoD and national security customers. Our functions can be summarized as follows, covering the entire system acquisition process:

- Planning and systems studies -- pre-competitive systems definition
- Trade-offs and simulations of system requirements to help prioritize user needs
- Technical Requests for Proposal, and technical evaluation of proposals
- Early detection of development problems and timely identification of alternative solutions, to preserve schedule, cost and performance
- Independent analysis, verification and validation of data and performance to assure mission success
- Launch verification and readiness assessments (boosters, satellites and ground systems),
- Launch and on-orbit operations and work-arounds

The primary tools and skills employed by Aerospace are:

- Simulations and modeling of system concepts and operation
 - orbits and constellations, system performance, multi-system architectures and interactions, cost/requirements trades
- Engineering analysis, design and simulation of spacecraft, launch vehicles and ground control systems
 - structures, propulsion, sensors, power and electronics, communications, guidance and control, computers
 - cost and manufacturing engineering
- Hands-on engineering, science and technology for space systems development
 - 2000 degreed scientists and engineers
 - specialized engineering laboratories and technology centers
- Independent research and component diagnostics
 - electronics, failure analysis, fluid and solid mechanics, materials, lubricants, batteries, sensors, telemetry and image analysis, space environment

Recent Launch History

Fiscal Year	U.S. Air Force/Aerospace		U.S. Commercial	
	Success	Failure	Success	Failure
1986*	3	0		
1987	5	0		
1988	6	1		
1989	11	0	1	0
1990	13	0	6	1
1991	11	0	4	2
1992	12	0	6	1
1993	11	1	4	1
1994	9	0	8	2
1995	9	0	12	3
1996 (1Q)	2	0	2	1
Total	92	2	43	11
% Success	98%		80%	

* Post Shuttle Challenger Accident/T34D9 Failure

THE AEROSPACE CORPORATION

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As a prime example of the value added to the DoD space program through Aerospace technical effort, I would cite the success rate of Air Force space launches conducted with Aerospace systems engineering and insight. Over the past ten years (since the Challenger and Titan 34D9 losses in 1986), the success rate of the Air Force/Aerospace team launching the Atlas, Delta, Titan and IUS has been 98%, and the satellite mortality in the first six months of operation has been 1.4%. Comparable figures for launches carried out under commercial practices with the same Atlas-Delta-Titan fleet have been 87% launch success, and 10% satellite mortality. If the newer commercial launchers Pegasus, Taurus, Lockheed Launch Vehicle, Conestoga and AmRoc are included, the commercial success rate drops to 80%. This translates into the avoidance of one to two launch and satellite failures a year as a result of the thoroughness of the Air Force readiness process as implemented by Aerospace, compared to commercial experience.

Avoidance of a single launch failure more than covers the Aerospace budget of about \$300 million annually. (The booster costs of commercial launches are negligibly smaller than military launches. The higher commercial risk can be offset by insurance, typically 15-18% of hardware cost. But where the success of a one-of-a-kind national security mission is concerned, representing typically from \$800 million to \$2 billion in hardware, no amount of insurance can compensate for the loss of a critical military communications, battlefield observation, or missile launch warning capability in time of crisis.)

In addition, Aerospace has found a number of potentially fatal flaws in orbit-insertion stage design, guidance algorithms, booster engine fuel line contamination, and Titan nozzle material changes, for example, and has recommended workarounds to avoid failure. Aerospace was able to reduce the cost of the recent Spacelift Range upgrade by \$500 million through an innovative common antenna and tracking station design. The documented savings to the DoD realized annually from Aerospace effort exceed \$2 billion – almost seven times our annual cost. That's a tremendous investment for our taxpayers!

2. Impact of the Kaminski Plan for Management of DoD FFRDCs

From Aerospace's point of view, Dr. Kaminski's plan has two particularly helpful features. First, it defines the core capabilities of the FFRDC that are required by the DoD, and affirms the essential need for FFRDC stability, expertise and objectivity. Second, it provides that the work load of the FFRDC will be determined by program need, within the overall DoD and Air Force *program* budgetary limits set in authorization and appropriation language. It reduces the instability that has characterized the past five years of Aerospace funding, and will allow us to manage rationally to motivate and retain the high quality staff required for our sponsor's mission, and to replace key skills lost through the damaging forced attrition of 1991 through 1996.

The DoD Management Plan defines the core work of Aerospace using three criteria; as delineated in the DDR&E letter of 1 December 1995, core work must be:

- Consistent with Aerospace's mission: to support the Air Force and military space and space-related systems basic to national security; to be a vital link between the U.S. Government and scientific and industrial organizations; and to ensure that the full technical resources of the nation are applied to space systems development and exploitation
- Consistent with Aerospace's core capabilities and competencies: launch certification, systems-of-systems engineering, systems development and acquisition, process implementation, and technology application
- Consistent with Aerospace's special relationship with its sponsor: objective, high quality work; freedom from real or perceived conflict of interest; broad access to information; comprehensive knowledge of sponsor needs and problems; long term continuity; technical link between the Air Force and worldwide space organizations

SMC has further defined 23 core functions specifically applicable to their acquisition mission; these and the five core capability areas defined by DDR&E (above) form the criteria for defining the appropriate core work for the FFRDC activity and the parent Corporation.

Embodied in SMC Guidance (formerly Regulation) 800-8 there is a carefully defined process for SMC, as the day-to-day manager of the FFRDC activity, to select and validate tasks that are appropriate for the FFRDC as opposed to a government or industry source. Every one of the more than 180 Technical Operation and Plans documents that make up the FFRDC statement of work must go through this review, and each requesting government project manager must certify that only the Aerospace FFRDC can effectively perform the task. Guidance 800-8 also specifies 11 criteria that must be used to justify use of an FFRDC -- the most important of which deal with comprehensive knowledge, special expertise, and freedom from conflict of interest. Because of the government's need for impartial and trusted technical advice throughout program evolution from competitive concepts to independent assessment of contractor performance, competitive industry sources possessing the required breadth and expertise cannot avoid conflict of interest; the function must be performed by an "insider" -- either government or an FFRDC. That trusted relationship with the Aerospace FFRDC is accepted by DoD and industry, and is the *sine qua non* of effective government technical insight.

The stated intent of DoD and our sponsor, SAF/AQ, is to stabilize the Aerospace FFRDC manpower at the current FY 1996 delivery level, and let the funding float to accommodate that level. Further, work that falls within the definitions of core capabilities and core functions as stated by DDR&E and by SMC is now clearly acceptable for both the Aerospace FFRDC and its parent corporation. This will allow Aerospace to develop with its FFRDC sponsor an appropriate mix of DoD and non-DoD space-related work that can support the full range of technical capabilities needed to accomplish the FFRDC mission, and make the unique resources of Aerospace available to the broader space community with which DoD must interact.

The business of Aerospace is *space*, and the application of space-related technologies in the national interest. We intend to continue as the government's trusted partner in national security space, and to enhance our contributions as a world leader in space systems planning, engineering and technology. Aerospace work has consistently focused on these space-related core areas -- there is no "non-core" work performed by The Aerospace Corporation. Over the past five years, Aerospace FFRDC manpower has been reduced by almost 30% as a result of congressional ceiling reduction. Whole task areas have been relinquished; all of them are customer-validated requirements essential to space mission success and risk management. Some work has been assigned to less-qualified industry sources when possible; and much of the work is simply not being done. Thus far the mission performance and launch success record has held together; but the perception of risk and uncertainty is increasing rapidly.

The Kaminski plan reinforces the special need for FFRDCs, and provides additional focus for the definition and stabilization of appropriate Aerospace core work, consistent with our charter and our historic skills base. I support its intent, and urge the congress to adopt it.

3. Additional Issues

The subcommittee has asked for discussion of the recent funding ceilings, competition, and other issues impacting the Aerospace FFRDC.

I would add to this list the extraordinary level of investigative activity focused on Aerospace in the last several years -- none of which has resulted in a single substantive finding. This has included the DoD and Air Force IG questioning sole source contracting practices by FFRDC sponsors; GAO and DCAA investigations of Aerospace compensation and use of fees; two DSB panels questioning the need for FFRDCs and their sponsors' management and work selection processes; and three congressional committees, of which this is but one. In each case, the investigators determined the facts, separated them from the allegations, and found the performance of the Aerospace FFRDC and its sponsor to be reasonable and appropriate. Many of the allegations are attacking not Aerospace specifically, but the appropriateness of the whole FFRDC concept and the Federal Acquisition Regulations by which we are bound. Those are appropriate issues to be addressed in an orderly manner by the DoD and the congress as matters of government policy.

The congressional ceilings on FFRDCs, and the continuing resultant uncertainty, have done severe damage to the Aerospace Corporation's staff, and in particular its ability to maintain infusion of the top quality, experienced people essential to its assigned tasks. The environment of the past five years has created in the minds of the younger staff particularly, the impression that there is no future at Aerospace. This is completely at odds with the FFRDC environment envisioned by the DoD -- a stable, expert, innovative, forward-looking trusted resource for the national defense.

None of the Aerospace FFRDC tasks is "discretionary" -- each is an essential part of the systems acquisition process, is validated as requiring the capabilities of an FFRDC, and is funded through the individual program elements and agency budgets established by congress. Our long term system continuity tasks cannot be turned on and off with annual funding cycles. Because Aerospace must provide the government informed recommendations in every technical discipline and program function encountered, our staff must possess expertise and experience at least the

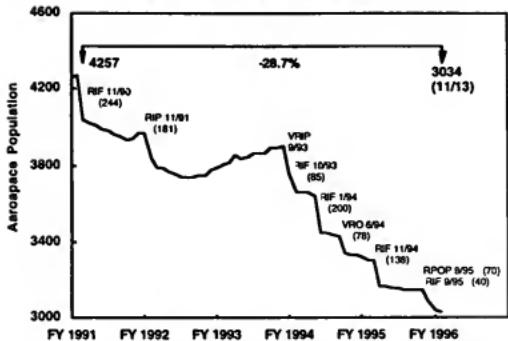
equal of industry in every area -- in quality, if not in depth or numbers. That means we must offer fully competitive salaries, benefits, and working conditions, including flexibility for appropriate interaction with the local communities and civic environments in which we operate, and the academic and industrial research and technology sources upon whom we depend for cooperative technical and educational interaction.

Aerospace is a business which must operate under the industrial cost principles of the FAR, and compete in the same talent market as the space systems prime contractors. Our non-profit, sole-source status limits our range of business activities to those consistent with the FFRDC mission and the DoD "core capabilities" concept; but it does not relieve us of the requirement to hire and retain the best technical and management talent available. Uncertainties created by the ceilings of the past years place us at a disadvantage compared to our local industry talent pool, particularly in the critical technical ranks that set the tone for the entire corporation, and cripple our ability to maintain the staff quality that is essential to our primary mission.

Our Air Force and DoD customers conduct a semi-annual evaluation of Aerospace technical and management performance. Although our overall score has consistently increased through the years to over 95%, the number of concerns stated in writing by our customers has increased. The increased concerns deal specifically with Aerospace skills mix and manpower unavailability for critical tasks, and with our inability to staff critical program risk management functions, or to replace key personnel and skills lost through attrition. Some of the experience lost through retirement incentives and RIFs is truly irreplaceable; although we have undertaken major efforts to archive and transfer corporate knowledge to younger staff, the program is swamped by the rate of involuntary departure.

Aerospace Population

October 1, 1990 Through November 13, 1995



DATA-00-GAP

THE AEROSPACE
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Aerospace has lost almost 30 percent of its total staff since the institution of congressional ceilings in FY 1991. While Aerospace has been forced to decrease its staff by about 7% per year, the local job market has recovered to the point that there are now over 1000 engineering openings within a few miles of Aerospace. The attraction of the telecommunications and entertainment software industry offers opportunities that are taking our best young talent, who see no future in what they perceive to be a shrinking Aerospace. Twenty percent of our Solid State Electronics Department has left voluntarily within the last 7 months. We have been unable to fill a single position for over 10 months in computer hardware system engineering -- and during that period have lost 30% of the staff. Thirty percent (six) of our software experts went to non-defense companies at very substantial salary increases; 33% (five) of our experts in secure computers were lost in the last seven months, including the department head. Seventy percent of our voluntary terminations are in the 20-39 year age range; and 68% of those terminations list job stability and career opportunity as their primary reasons for leaving.

In order to maintain the maximum technical MTS delivery rate to ongoing programs, Aerospace has accomplished draconian reductions in support staff and in deferral of facilities, equipment and software upgrades. We have kept the real dollar cost of an Aerospace MTS below inflation for eight years, and in FY 1996 have reduced the actual dollar cost independent of inflation. Most of this shortfall must be made up in the next year or two, and budget relief is essential. Aerospace has already gone far below the level of necessary core work as requested by our sponsors. The validated and funded DoD requirements for Aerospace MTS exceed our ceiling-limited ability to

deliver by over 400 people. Every member of the staff is working longer hours, and the stress level and increased program risk is palpable.

It is difficult for me to convey to you adequately the depth of our concern -- General Lyles, the Commander of SMC, calls it a four letter word -- FEAR -- when we must leave major system risk assessment tasks undone. These are tasks that can be properly performed only "inside" the government, and we have neither SMC nor Aerospace manpower to apply, although the congressional funds and the approved requests are there in the program managers' hands. Because the congressional ceilings of 1991 to 1996 did not correlate Aerospace FFRDC funding with the *growing* DoD space systems acquisition funding and workload, the overall result has been extremely detrimental to our ability to serve our sponsor in the manner he requires.

I know that there is concern within congress and DoD about minimizing the "overhead" and "infrastructure" that is viewed as providing no value added to the acquisition process, and FFRDCs are lumped into this along with overspecification of paper clips and box wrenches. Aerospace does not perform unnecessary tasks, nor add another layer of management to the acquisition process. I assure you that General Lyles and I are working very hard in the spirit of Air Force acquisition reform, to streamline our processes, to reduce manpower-intensive activities, utilize new information technology, and make the contractor responsible for ultimate system performance. But I submit that there is a core level of government insight, responsible technical management, and independent assessment below which no prudent program manager should go in his stewardship of the limited tax dollars allocated for critical defense missions. And I assure you we have already dropped below that minimal level in a number of space programs supported by Aerospace.

Competition of FFRDC functions is a contradiction in terms. I hope that this committee will review carefully the reasons why FFRDCs were created, and are still needed by DoD, before attempting to encourage some form of competition. Space systems typically require 5 years to define, 10 years to build, and 10 -15 years to launch and operate to completion (GPS started in 1963, and went operational in 1995 -- it will continue for at least another 15 years through Block IIF). The government requires engineering continuity throughout that cycle -- a function not appropriate for frequent competition.

Further, the government requires an engineering advisor who can integrate all DoD space systems and their technologies into the most compact and cost-effective architecture possible -- thus full access to all related launch, satellite and ground systems and their contractors, classified and

unclassified, is required in order to achieve the most effective architecture. No contractor with this comprehensive access could simultaneously provide objective advice to the government using others' proprietary data, and also compete for space systems work against those companies that it evaluates. The breadth of skills required to perform the Aerospace FFRDC function in its systems architecture entirety is equivalent to that of only a few large prime contractors; no SETA has the combined range of skills, facilities and program history required.

The government's requirement for the Aerospace FFRDC mission requires complete objectivity and freedom from conflict of interest; a highly expert staff; full access to all space programs and contractor data sources; special simulation, computational, laboratory and diagnostic facilities; and continuity of effort that involves detailed familiarity with the sponsor's programs, past experience, and future needs. The integrated application of these functions cannot be achieved by breaking the tasks up into pieces that can be handled by a number of partially qualified sources. Nor can it be handled by any existing competitive prime contractor without impossible conflict of interest.

The key to Aerospace effectiveness is its trusted team relationship with both the sponsor and the contractor community. Once suspicion of conflict enters through competition of the Aerospace function, the effectiveness of the team is lost. Although the use of profit-making and competitive System Integration (SI) contractors is common in some government program areas of restricted scope; once the tasking requires access to a wide range of programs and sensitive data, conflict of interest has resulted in SI exclusion from other competitive opportunities. Given the current DoD affirmation of the need for expertise and objectivity; if the Aerospace FFRDC were to be abolished, the government would have to somehow re-create it, with all of its conflict of interest protections, in order to meet its requirements.

I believe some of the funding turmoil of the past five years, and much of the instigation for competition of FFRDC work, stems from a fundamental misconception within government and industry about the FFRDC role. It is the task of the Aerospace FFRDC to serve as an integral part of the sponsoring organization's structure in carrying out its mission. It is an "insider" function, and by its nature is a comprehensive integration of multisystem data from many sources; it cannot be segmented or performed by competitive or profit-making organizations in industry, without losing the essential qualities of integration and objectivity in representing the government's interests exclusively. There must always be an impartial, expert "insider" organization, either an organic government resource or an FFRDC, to "watch the store" from a technical perspective, and to convert the congressional and armed service management requirements into performance specifications and hardware realizations that ensure the government gets what it asked and paid for.

The Defense Science Board report of May 1995 recently forwarded to congress by Dr. Kaminski has reaffirmed the special needs of the DoD for the objective and integrated qualities of the FFRDCs to perform tasks integral to the Department's mission.

Dr. Kaminski's management plan, by clearly defining the core activities required of the DoD FFRDCs, has done a great deal to clarify the government's need for the FFRDC functions, and for their continued contracting and management in a manner fully consistent with the highest acquisition principles.

Summary

I would like to leave you with some concluding summary thoughts about Aerospace:

- Aerospace is focused on the success of its sponsor's mission
- Aerospace is the integral space systems engineering arm of the Air Force and National Security Space program
- Aerospace is responsible for hands-on, day-to-day participation in system acquisition decisions
- The key to Aerospace value and effectiveness is our process of systems engineering:
 - Stable, objective, expert advice backed by analysis and experiment
 - A trusted partner with our sponsors and industry
 - Breadth and depth of staff in all space disciplines
 - Access to sensitive planning and proprietary data
 - Continuity across all space programs and technologies
 - Colocation with the government customer
- Aerospace pays for itself in dollar value added to mission success

Thank you for the opportunity to place my views on the record; I stand ready to provide any further data or discussions that the committee may require. I am proud of the Aerospace Corporation and the value it provides to the government, and trust that you will adopt Dr. Kaminski's plan to put FFRDC management on a thoughtful and rational track that will permit us to continue to enhance the nation's space and defense capabilities as we were intended to do.

Mr. WELDON. Thank you, Mr. Aldridge.

Our next witness is Mr. Walt Morrow, director of the MIT Lincoln Laboratory.

**STATEMENT OF PROF. WALTER E. MORROW, JR., DIRECTOR,
MIT LINCOLN LABORATORY**

Mr. MORROW. Mr. Chairman, members, thank you for this opportunity to speak to you about MIT Lincoln Laboratory. I have a position statement which I have submitted, and there is also a set of charts which are in your material. And perhaps if we examine these charts as I briefly review the position statement, it would be helpful.

The first matter that I would like to address, turning from the first page, which is basically an outline, to the second page, is the fact that the laboratory is an integral part of MIT. The Government came to MIT in 1951 and asked it to establish Lincoln Laboratory to serve the DOD and the services in the field of electronics. Now, this brought subsequent benefit, we believe, to the Department and the services by providing access to the faculty, the research staff, and even the graduate students of this world-leading technical institution.

It also permitted the laboratory, frankly, to hire some very bright people. There are many people graduating from our leading universities today who are very happy to work for us because we are part of MIT, and thereby, they become supporters of the DOD and solvers of their technology problems. In addition, the institute provides sort of a quality assurance on our work. There is a review committee that the institute has that comes and examines our work to make sure that it is of the highest quality.

If we could turn to the third page now of the charts, I would like to talk a little bit about specifically what we do. Now, I thank Dr. Kaminski for giving a little bit of a precursor description of what we do. We are a large technology development laboratory. You might call us a technology development factory in some sense. And we serve all three services and Defense agencies, principally ARPA. We have had a long, stable relationship with the Department and the services, and in that stable relationship, we attack problems—as you can see on the chart—by first identifying what is this problem that is facing the military, then inventing the technology that will solve this problem; building demonstration equipment like the one Dr. Kaminski cited, the Maser aircraft, and then demonstrating it. That leads, then, to an operational capability like JSTARS. And then, finally, we transfer this technology to industry so that this technology can be replicated in large numbers.

The core areas have already been described. They primarily focus in the area of surveillance and identification of military targets in various regimes: Air defense, ballistic missile defense, space surveillance, surface surveillance, and so forth.

Now, if you could turn to the next chart, I would like to briefly talk a little bit about the management actions that have been taken at the laboratory over the past few years as the DOD budget has declined. You will note on the left chart there, the funding chart, that in constant dollars, the DOD funding at the laboratory has decreased on the order of 40 percent in the last 5 or 6 years,

which is certainly comparable to the rate at which the Defense budget has decreased during that same period, and it is considerably greater than the rate at which the S&T budget has declined. At the same time, we have scaled back the employment at the laboratory, and it is down about 28 percent at this time.

During this scaledown, the FFRDC funding ceiling was not a problem to us because we were scaling down and our sponsors were scaling down our funding at a greater rate, actually, than the ceiling decreased. However, in fiscal year 1995, we reached equilibrium with the ceiling, and in fiscal year 1996, there is a problem not relative to the staff, which we are holding steady at this point, but there are a number of very important problems which we have been asked to solve. They involve expensive, large equipment, demonstration and research equipment. And to buy the component for this equipment, we go to industry, and those costs of going to industry are causing a rise, actually, in the total budget, not for the people but to buy these critical components from industry.

If we could turn now to the next chart, I would like to comment briefly on the DOD-FFRDC management plan of last May, May 1995. We are in complete concurrence with this plan. The fee guidelines are not an issue. MIT does not charge a fee for its work. We are quite happy with the establishment of the advisory committee, and we have already briefed them. And as far as core work is concerned, that is not an issue. The lab continually has stuck to its core work, which is the surveillance activity that I mentioned earlier.

We would very much support the move to control—at least at the laboratory-type FFRDC's—the number of technical staff. This is how we operated the lab for some 40 years, and we think this is a good way to ensure quality of staff and quality of the programs that are undertaken, and we are perfectly familiar with how to operate with an NTS ceiling. We are concerned that funding ceilings might continue, and this could pose serious problems for ourselves and the services because of the need for these specialized demonstration and intelligence sensor equipment which we are now involved with which require large outside purchases from industry of components of one sort or another.

Turning now to the last chart, the sixth one, I would just like to mention a few of the contributions. You have heard some of them earlier. Technology from Lincoln has found its way and supports the existence of a number of significant systems: the JSTARS, the AWACS, the MILSTAR, the FLTSAT, the GEODSS system, all of those got technology from the laboratory in its early days and more recently.

I would also like to point out another contribution not on the side of new military capabilities but saving money for the taxpayer. In both the case of the advanced MILSTAR system and the new space-based infrared system, technology from the laboratory has made possible very substantial savings in the weight and therefore the cost of these new systems, and we believe that a number of billions of dollars can be saved in future deployment of those systems due to technology which came from the laboratory, so much as in the case of Aerospace, there is a payoff for the investment in the laboratory many times the original cost.

Finally, I would like to point out that we are transferring technology continuously to the services and to their industrial suppliers in a number of different areas: ballistic missile defense, military communications, and so forth. And lastly, just sort of a side benefit of this whole activity, there are some 65 private firms that have spun out of the laboratory over the years involving 100,000 jobs which now contribute to the defense industrial base and also to the civil economy of the country.

To sum up, I would like to say just this: That I think that the Department has gotten its money's worth from its investments at MIT Lincoln Laboratory many fold over, and we continue and I expect to continue as director to ensure that those benefits will flow to the Department in large measure over the coming years.

Thank you very much.

[The prepared statement of Mr. Morrow follows:]

Opening Statement

At the 5 March 1996
House Defense Research and Technology Subcommittee Hearing on
Federally Financed Research and Development Centers

By

Professor Walter E. Morrow, Jr.
Director, MIT Lincoln LaboratoryI. INTRODUCTION

Mr. Chairman, thank you for inviting me to address the committee on this important subject.

I am Walter E. Morrow, Director of MIT Lincoln Laboratory. I appreciate the opportunity to address these topics:

- The relationship of the Laboratory to MIT;
- The value of the Laboratory to the Services and the DoD;
- Management actions to scale back the size of the Laboratory as the DoD budget has declined;
- Comments on the DoD Management Plan for FFRDCs; and
- Lincoln Laboratory technology contributions to U.S. military capabilities and reductions in the cost of military systems.

II. RELATIONSHIP OF LINCOLN LABORATORY TO MIT

In 1951, at the request of the Federal Government, MIT agreed to establish the Laboratory without a fee. By so doing, MIT provided access for DoD and the military Services to the faculty and research staff of a world leading technical university.

This relationship also provided the ability to attract and retain a very high quality research staff to address DoD military technology problems.

Finally, operation by MIT provides assurance of the quality of the research program and supports the independence of the advice that the Laboratory staff provide to the Services and the Department of Defense.

III. VALUE OF THE LABORATORY TO THE SERVICES AND DoD

Lincoln Laboratory is a large (about 2000 personnel) technology development laboratory which serves the three Services and ARPA in the development of new surveillance and combat-identification techniques as well as the communications and control technology which permit military commanders to utilize these new capabilities.

In carrying out this work, Laboratory staff, with a wide spectrum of expertise, attack military technology problems with a comprehensive approach which encompasses:

- Problem identification based on interaction with military leaders;
- Research on relevant phenomenological issues;
- Conception of new system approaches;
- Technology, hardware, and software development;
- Operational field demonstrations;
- Technology transfer to industry;
- Expert consulting to the Services and DoD on applications of Laboratory developed technology.

In addition, the Laboratory carries out research on advanced electronic and optical devices, as well as digital processing technology needed to enable advanced military surveillance systems.

The core areas of expertise addressed by the Laboratory include:

- Defense against low-observable air vehicles;
- Ballistic missile defense;
- Tactical battlefield surveillance of ground targets;
- Combat identification of friendly and enemy targets;
- Military communications;
- Space surveillance / control.

IV. MANAGEMENT ACTIONS TO SCALE BACK OPERATIONS AS THE DOD BUDGET DECREASED

The Laboratory is funded by the Services and ARPA with between 100 and 200 separately funded programs which are focused on its core capabilities. About 60% of the funds cover

basic employee costs and Laboratory operations while about 40% of the funding is needed for outside purchases from industry of components and equipment needed for experimental and demonstration units.

The surge in Laboratory funding in the late 1980s was largely due to the demands of the SDIO program. With the end of the Cold War, the DoD budget has decreased substantially and with it the funding of the Laboratory. Since 1990, the DoD funding of the Laboratory has decreased over 40% in real dollars, until today it is roughly the same as in 1980. Much of this decrease was reflected in a large drop (greater than 40%) in our outside purchases of components for experiments and demonstrations. In addition, the management of the Laboratory has scaled back the number of employees by nearly 30%.

In the period of FY91 through FY94, our DoD funding actually decreased faster than the FFRDC ceiling allocated to the Laboratory. By FY95 sponsor support roughly equaled the FFRDC funding ceiling. In this fiscal year, FY96, there has been a turnaround in sponsor requirements for large experimental systems, and this drives a resurgence of outside procurements from industry. While no increase in the Laboratory staff is planned, a number of highly important programs require substantial increases in purchases of specialized technical components and equipment from industry. As a result, an exclusion from the FY96 funding ceiling is being sought for the major industrial purchases needed by these programs.

V. COMMENTS ON THE DOD FFRDC MANAGEMENT PLAN OF 18 MAY 1995

MIT and the Laboratory have the following comments of the major elements of the DoD plan for management of FFRDCs:

- Guidelines in the use of fees: This is not an issue. MIT takes no fee for the operation of Lincoln Laboratory
- Establishment of an independent DoD Advisory Committee on FFRDCs: This is not an issue. The Laboratory has already briefed the Committee and is quite comfortable with the committee's mandate.
- FFRDCs to be limited to core activities: This is not an issue. The Laboratory has traditionally been limited to core activities with its program being approved annually by a Joint Advisory Committee chaired by the Director of Defense Research and Development and composed of the Service Acquisition Assistant Secretaries and the Director of ARPA. In addition, the President of MIT has established a Lincoln Laboratory Advisory Board composed of academic and industrial members who advise him on the appropriateness and quality of the Laboratory programs.
- Level of effort controlled by the number of MTS (Professional Staff): This proposal is strongly supported by MIT and the Laboratory. From its establishment in 1951 until 1991, the Laboratory size was controlled by an MTS ceiling. By long experience, this mechanism has been found to lead program managers to maximize the quality of their staff through careful staff appraisals.

and, where necessary, to request resignations. In addition, such a ceiling leads to only the most important DoD programs being undertaken.

There is, however, a significant Institute and Laboratory concern:

- The continued use of FFRDC funding ceilings instead of the historic MTS ceiling, at least for a technology development laboratory FFRDC such as Lincoln, is very difficult to manage and inappropriate because of significant variations in the need for purchases of components and equipments from industry.
- An MTS personnel ceiling is far more appropriate for a Laboratory FFRDC since it restricts the Laboratory size while permitting year-to-year variation in the levels of purchases of components needed in its experimental programs.

VI. MIT LINCOLN LABORATORY CONTRIBUTIONS TO DoD AND THE SERVICES

Over its considerable history, the Laboratory has generated technology which has enabled or directly led to a number of important fielded military surveillance and communication systems. Among these are:

- JSTARS: An airborne surveillance system capable of seeing moving or fixed ground targets; used both in the Gulf War and now in Bosnia.
- AWACS: An airborne surveillance system capable of detecting and tracking aircraft which was also deployed in the Gulf War and in Bosnia. An important upgrade based on recent Laboratory developments is now under consideration.
- MILSTAR: The fundamental technology that permits the MILSTAR military satellite communication system to protect transmissions against interference and intercept was developed at the Laboratory. This technology was tested with Laboratory-developed experimental satellites LES-8 and -9, as well as experimental EHF payloads on FLEETSAT satellites.
- FLTSAT: The basic FLEETSAT UHF satellite communications technology was developed by the Laboratory and flown in the LES-5 and -6 satellites. The FLTSAT and its follow-ons are the principal communication systems for the U.S. Navy.
- DSCS: The early Lincoln experimental satellites LES-1 through LES-4 laid the foundation for the DSCS military satellite communication systems now in operation.
- GEOSS: This system provides the Air Force with a deep-space surveillance capability. Lincoln developed and demonstrated the fundamentals of this electro-optical deep-space surveillance capability with its experimental site in New Mexico.

In addition to developing a wide variety of military technology which has greatly enhanced the capabilities of U.S. armed forces, Lincoln-developed technology has laid the foundation for major cost savings in future military space systems. In the case of both future MILSTAR satellites and also the future infrared ballistic missile launch detection system (SBIR), savings of about two-thirds in weight should lead to savings of billions of dollars as these systems are deployed in the next few years.

In addition to Laboratory developments leading to major new military capabilities and cost savings, Laboratory-developed advanced electronic and optical technology has been transferred to industry and applied to a number of major new system including infrared focal-planes for the Army THAAD theater ballistic missile defense system, new visible optical focal-planes for an upgrade of the Air Force GEODSS system, MILSTAR ground terminals for the Army, and advanced 0.25 micron lithography for the next generation of low-power high-performance VLSI circuits for soldier-carried electronics systems.

Finally, some 65 companies have been spun out of MIT Lincoln Laboratory to contribute to the defense industrial base. In addition to these companies, Lincoln-developed technologies such as the laser diode, digital data transmission over telephone circuits, graphical computer displays and error correcting codes have found their way into a wide variety of consumer products such as the CD player, computer networks including the Internet, and the personal computer.

VII. SUMMARY

MIT has operated Lincoln Laboratory for over 40 years as a public service without fee in order to make available its expertise for the solution of pressing military technology problems.

The primary core focus of the Laboratory is on advanced electronics for surveillance and identification of military targets and communication systems to deliver this information to military commanders.

In recent years, the Laboratory management has significantly scaled back its personnel in view of decreases in the DoD budget. Until FY96, the FFRDC funding ceiling has not been an issue; but, in FY96, increased demands for major component purchases related to a number of very important DoD programs have created a funding ceiling problem. The Laboratory recommends excluding these purchases from inclusion in the funding ceiling and strongly recommends an MTS staff ceiling for future control of Laboratory size.

MIT and Lincoln Laboratory supports the DoD Management Plan for FFRDCs particularly the proposal to shift to an MTS personnel ceiling.

Over the years, the Laboratory has made notable contributions to new military capabilities as well as to significant potential cost savings in military systems. In addition, spin-offs of new industrial companies and technology have made notable contributions to products for the civil economy of the US.

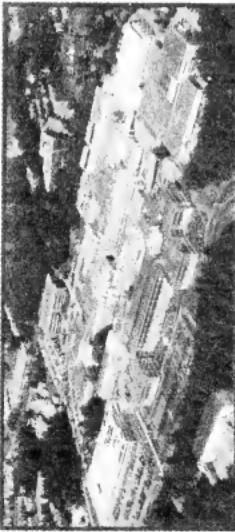
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

LINCOLN LABORATORY

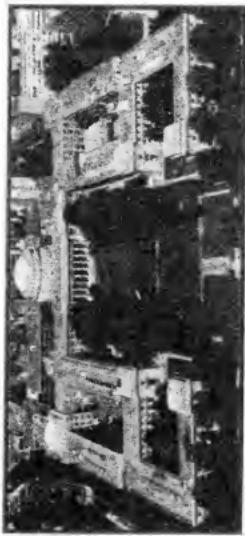
Walter E. Morrow, Jr — Director
5 March 1996

OUTLINE

- Lincoln Laboratory — An Integral Part of MIT
- Value to DoD
- Laboratory Management Actions
- DoD Management Plan — Comments
- Laboratory Contributions



MIT LINCOLN LABORATORY, LEXINGTON, MA



MIT, CAMBRIDGE, MA

MASSACHUSETTS INSTITUTE OF TECHNOLOGY LINCOLN LABORATORY

AN INTEGRAL PART OF MIT

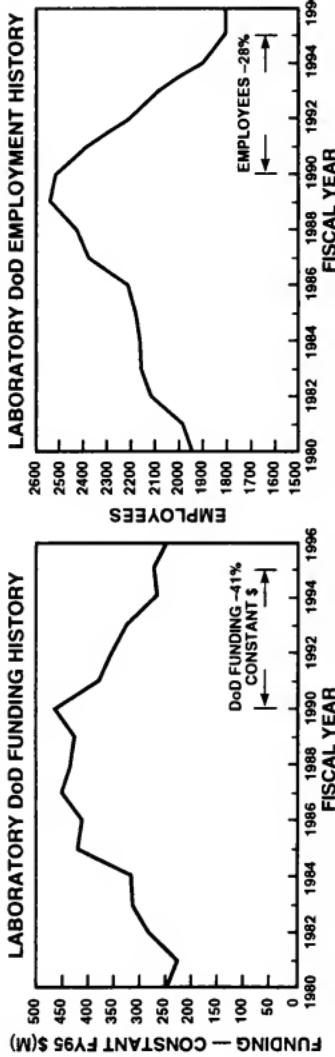
- Government Requested MIT to Establish Lincoln Laboratory in 1951
- Operated as a National Service by MIT with No Fee
- Substantial Benefits to DoD From MIT — Lincoln Laboratory Connection
 - Access to Expertise at a World Leading Technical University is Important to DoD
- Ability to Attract and Retain Highest Quality Technical Staff to Address DoD Problems
 - Assures Technical Quality in Research Program
 - Supports Lincoln Laboratory's Independent Advice on Defense Technology Issues

LINCOLN LABORATORY VALUE TO DoD

- Lincoln Laboratory is a Large Technology Development Laboratory Serving the Three Services and ARPA
- A Long-Term Stable Relationship with DoD (45 years) Permits Solutions to Important Military Technical Problems
 - Problem Identification and System Conception
 - Technology Development and Hardware Demonstration
 - Operational Demonstration
 - Technology Transfer to Industry
 - Expert Consulting
- Lincoln Laboratory Addresses DoD Technology Problems in These Core Areas
 - Defense Against Low Observable Air Vehicles
 - Ballistic Missile Defense
 - Tactical Battlefield Surveillance
 - Combat ID
 - Military Communications
 - Space Surveillance / Space Control

LINCOLN LABORATORY MANAGEMENT ACTIONS (1990 – 1996)

- Lincoln Laboratory Has Scaled Back Operations as DoD Budget Has Declined



- FY91 – FY94 FFRDC Funding Ceiling for Lincoln Laboratory Was Not Constraining
 - Sponsor Support Reduced Faster Than Ceiling
 - In FY95 Sponsor Support Equalled Ceiling
- FY96 Sponsor Programs Require Substantially Increased Procurements — Exceeding Ceiling
 - Ceiling Exclusion Being Sought for Major Industrial Procurements
 - Lincoln Laboratory Employee Levels Will Not Increase

DoD FFRDC MANAGEMENT PLAN (18 May 1995)

LINCOLN LABORATORY COMMENTS

- Key Elements of Plan
 - (1) Guidelines on Use of FFRDC Fee
Not an Issue; MIT Takes No Fee
 - (2) Establishment of an Independent DoD Advisory Committee
Not an Issue; Lincoln Laboratory has Briefed Committee
 - (3) FFRDCs Limited to Core Work
Not an Issue; Lincoln Laboratory Traditionally Restricted to Core Work
 - (4) Level of Core Effort Controlled by Number of MTS (Professional Staff)
Strongly Supported by Lincoln Laboratory
 - From 1951 to 1991, Lab Size Controlled by MTS Ceiling – Motivates Maintaining Staff and Program Quality
- A Lincoln Laboratory Concern
 - Funding Ceiling Difficult to Manage Due to Program Needs for Highly Variable Industrial Procurements
 - MTS Personnel Ceiling Restrains Lincoln Laboratory Size and Permits Procurements to Meet Sponsor Program Needs

LINCOLN LABORATORY CONTRIBUTIONS TO DoD

- A Legacy of Lincoln Laboratory Technology in Major Fielded Systems
 - JSTARS
 - MILSTAR
 - AWACS
 - FLTSAT
 - DSCS
 - GEODSS
- Major Cost Savings for Future Space Systems Identified in Bottom Up Reviews
 - Advanced MILSTAR System — Lincoln Laboratory Advanced EHF Technology is the Foundation for 70% Smaller Spacecraft, Much Cheaper
 - SBIR — Split Mission Payload Approach Based on Lincoln Laboratory Technology — 60% Weight Reduction Enables Cost Reduction
- Lincoln Laboratory Transfers Technology to Industry
 - Ballistic Missile Defense: Radar Discrimination Algorithms, THAAD Interceptor IR Focal Plane Arrays
 - Space Surveillance: GEODDS Visible Focal Plane Arrays
 - Military Communications: MILSTAR Scamp Terminal
 - Advanced Electronics: Sub-0.25 Micron Optical Lithography for Next Generation VLSI
- 65 Private Companies Spun Out of Lincoln Laboratory Contribute to the Defense Industrial Base

Mr. WELDON. Thank you, Mr. Morrow.

Our next witness is Larry Druffel, director of the Software Engineering Institute.

STATEMENT OF LARRY DRUFFEL, DIRECTOR, SOFTWARE ENGINEERING INSTITUTE, CARNEGIE MELLON UNIVERSITY

Mr. DRUFFEL. Thank you, Mr. Chairman, members. I have also submitted a position statement, and I will just summarize the major points that I have made in that statement.

The SEI is relatively new among the FFRDC's and certainly among the smallest. We were established in 1984 after a competitive procurement process initiated by DOD. That was started after an industry-led panel reviewed the situation and recommended that an SEI be established and that it be at a major university because they did not believe that industry would be willing to do the kind of work that they wanted done, and the SEI is managed by CMU, as with MIT Lincoln Laboratory, without fee.

I will not presume to lecture you on software, but let me just spend a moment talking about the importance of software to our defense systems. When I speak of software, I am not talking about the software that resides in a PC. I am talking about software that is in a radar, that is in the avionics of an airplane, flight controls, missile control, all of our weapons systems. In fact, it is difficult to find a weapons system that does not have software embedded in it.

And the reason why Defense has been so aggressive at pursuing the use of computing in this way is, it provides enormous flexibility. Let me just use as a couple of examples first the dramatic example in the gulf war where the Patriot missile—which is fundamentally designed as an antiaircraft missile—its software was changed so that it could be used to combat Scuds, and we know the effects of that. Other examples abound. I am sure my colleagues from Aerospace and Lincoln laboratories could talk about systems that are in space and the ability to change the software in those systems and change the functionality. So we are talking about software that is embedded in weapons systems.

And DOD systems are very complex. Building software for something like the F-22 is an enormously complex undertaking. And the purpose of the SEI is to make sure that the technology that is evolving, whether in this country or abroad, whether from industry or the university research community, is available to the Department of Defense. And I will give you just a couple of examples of things we have done and try to explain why the panel that met in 1984 and another panel that met in 1994—both industry-led—concluded that industry would not do this kind of work.

The first example is the application of total quality management principles to software. Despite the strength of that movement in the 1980's, most companies and most DOD organizations were unable to figure out how to do that. The SEI put together a model that enabled organizations to assess their capability against the best practices. In order to do that, we had to get the best practices from the industry, thereby getting access to proprietary information, protect that proprietary information, and yet provide the lessons learned in terms of best practices. Every organization that has

applied this effectively, including Defense organizations, has seen anywhere from a 5-to-1 to an 8-to-1 improvement in return on investment, and it is now being proposed as an international standard to replace ISO-9000.

A second example is the use of structural models or the software for aircraft simulators. When the B-2 simulator was being built, the company doing it and the Air Force ran into a technical problem and asked the SEI for assistance. We discovered that the problem was much greater than the language problem they thought they had and realized that the approach that was formerly used would not scale up. We helped them to develop a fundamentally new architecture for simulators, and in doing so, they not only brought the B-2 simulator in on schedule and within budget but have since applied to the C-17 simulators and all other simulators that the Air Force procures. And in that instance, we had to work with multiple contractors who were in competition with one another as well as the Air Force getting proprietary information from them, protecting that, and yet ensuring that the industry would be able to move forward on this new standard.

The last example is the activities we have been engaged in since 1988, which are popularly becoming termed information warfare. In 1988, ARPA began to realize the enormous potential problems we were going to have with the internetting of computers and asked us to put together a team that would be able to respond to various viruses, worms, Trojan horses, and person-directed intrusions. And since 1988, we have been involved in that kind of activities and are now well positioned to support organizations that are attacked. And we cannot focus just on Defense, because Defense uses the same infrastructure as our commercial organizations use. So when an organization is under attack, it is difficult to tell who is the attacker and where the attack is coming from.

In all of these cases, we have to get proprietary information from the companies like Hewlett Packard, IBM; the vendors as well as from the network providers, as well as from the administrators and the users. None of these people are willing to provide that information where it can be accessed publicly but are willing to provide it because we are like a fire department. And when your house is on fire, you let the fire department in, but then, you expect them to recognize the sacredness of your belongings. And we have to do the same thing with respect to the proprietary information that we get access to, and we have done that very effectively.

So in each of these cases, what we have done is gotten information that we are able to then abstract the general lessons and make them available to the entire community without ourselves following any commercial advantage because we are not in that business. We are in the business of transferring the technology to others, so we license it to commercial companies, to professional services companies, and provide it to DOD organizations who take it forward themselves.

Now, with respect to the DOD management plan, we very much feel as Dr. Walt Morrow that first of all, the guidance on fee has no effect on us, because like MIT, Carnegie Mellon receives no fee. Limiting the work to the core mission, I think, is exactly the right thing to do. ARPA and the Air Force have always insisted that the

SEI stick to its core mission, and we have done so. We have no desire to do anything other than that for which we were chartered.

The independent DOD advisory committee I think is a useful step. I think it will give confidence to the other actions that are in place. In our case, before our contract was renewed in 1994, ARPA conducted a 6-month industry-led review of the SEI and found that we were executing the mission as they had intended, so I do not expect that that independent review panel will find anything different.

And finally, controlling things by MTS ceiling is very consistent with what we signed up to do in 1984. We came into being with a ceiling of 250 members of the technical staff. That was based on the independent industry review that, at that time, thought that 250 was the right number. That was back in 1984, when the DOD was spending about \$5 or \$6 billion on software. Today, they spend \$42 billion, so it is about a 700-percent increase. Since we started handling attacks on the Internet, the number of attacks by year has grown by 2,000 percent, from hundreds to over 2,500. During that same time period, our ceiling was reduced approximately 40 percent from the original plan and in real terms by 20 percent since 1993. So while we welcome the imposition of an MTS ceiling versus a dollar ceiling, I will point out that we are now down to 155 engineers, and it is very difficult to respond to some of the needs that we are seeing from the various service organizations and difficult to respond to some of the recent congressional suggestions that we should do more in information warfare or that we should do more for C4I. We would very much like to do that, but we do not have the capacity to grow to do that.

Thank you very much for the opportunity.

[The prepared statement of Mr. Druffel follows:]



Testimony of Larry Druffel
Director, Software Engineering Institute
Carnegie Mellon University

Before the
Subcommittee on Military Research and
Development
U.S. House of Representatives
Committee on National Security

March 5, 1996

Mr. Chairman and members of the Subcommittee on Military Research and Development of the House National Security Committee:

My name is Larry Druffel. I am the director of the Software Engineering Institute (SEI) at Carnegie Mellon University (CMU) in Pittsburgh, Pennsylvania. I appreciate the opportunity to talk with you about the SEI. I would like to highlight the following points:

- The SEI was established in 1984 through a competitive procurement process with approval of the Congress.
- CMU accepted the challenge to manage the SEI, without fee, as a public service. We recognize the importance of software in defense systems and proudly offer our expertise in the national interest.
- Software technology is used in virtually every weapon system and enables the U.S. to establish dominance on the battlefield.
- The SEI helps the DoD and the entire defense industry take advantage of advancing software technology. Two independent industry-led panels, a decade apart, reached the conclusion that industry could not and would not perform this work.
- The newly approved DoD Management Plan for FFRDCs formalizes what ARPA and the Air Force have always insisted upon: that we not stray from our core mission of software engineering technology transition.
- The SEI has been successful in fulfilling its mission. A recent independent panel commissioned by ARPA concluded, "The SEI has accomplished more than any other organization to improve software development." The panel also observed that much more remains to be accomplished.
- Congressional actions to reduce FFRDC funding levels leave the SEI with only 155 software engineers—40% below the original 1983 plan and 20% below our 1993 level. In the meantime, the amount of software acquired by the DoD has grown 700% (\$6B in 1984 to \$42B in 1995), and the number of computer emergencies handled by the SEI has grown 2,000% (from 132 in 1989 to 2,500 in 1995).
- The SEI's ability to perform its mission will be jeopardized if the ceiling constraints are not relieved. Without some relief, we will be hard pressed to respond to recent congressional and DoD requests for our support of information warfare initiatives and command, control, communications, computers, and intelligence (C4I) systems.

Background on the SEI

The Software Engineering Institute (SEI) is the newest of the DoD-sponsored FFRDCs, operating since 1984 at Carnegie Mellon University (CMU). We were established through a competitive procurement process, initiated by the DoD with the approval of Congress. The Advanced Research Projects Agency (ARPA) serves as our sponsor, providing general guidance and oversight to ensure contract compliance and technical excellence, and to be certain that the SEI performs work within its core mission.

In the early 1980s, the DoD and Congress recognized that the rapid growth of mission-critical software systems stressed the nation's budget and technical capability necessary to support these systems. Airplanes and weapon systems were being built that relied on complex embedded software; too often the software did not meet the system requirements and caused schedules to slip and costs to be overrun.

An independent study (commonly referred to as the "Eastman report"), commissioned in 1983 by the Undersecretary of Defense for Research and Advanced Technology, recommended the creation of an FFRDC dedicated to improving DoD software development and support by inserting modern technology into the weapon system life-cycle process.

Congress agreed with this recommendation, and the DoD initiated competitive bidding for the SEI FFRDC contract among the university community. CMU was selected on the basis of its technical ability to integrate new software technologies and capabilities into existing DoD systems.

CMU is a leader in many aspects of computing-related fields. The CMU computer science program is among the best in the world. The electrical and computer engineering program is similarly regarded. The CMU business school, its Heinz School of Urban and Public Affairs, and its social science programs are also acknowledged leaders for their information-systems orientation. Access to the faculty and students in these CMU programs, coupled with the SEI position in the ARPA research community, provides the SEI with significant advantages in fulfilling the challenging mission.

Rationale for Establishing the SEI

The SEI exists to help the DoD and defense industry take advantage of advancing software technology so that the U.S. can achieve information dominance on the battlefield.

The following excerpts from the previously mentioned Eastman report provide a perspective from over a decade ago:

Software is the essential element that controls, even defines, the system. Software is the embodiment of system "intelligence." In addition, it provides the flexibility to respond to changing threats, needs and requirements. Development and support of software for major military systems is one of the most complex of human endeavors, often requiring hundreds of people for five or more years at costs exceeding \$100 million (e.g., the B-1, Aegis and Safeguard systems). The demand for software is escalating rapidly. Software is often on the system critical path, often late

and over budget—the costs for software sometimes even dominate the project cost. To compound the situation, the supply of trained professionals is inadequate.

Computer programming is barely thirty years old. Only recently have scientific foundations for software engineering begun to emerge. But during this thirty years, there has been an enormous programming population growth, accompanied by an equally enormous accumulation of software inventory created by programming *art* rather than by scientific or engineering discipline. Of the perhaps fifty thousand programming people involved with defense software, only a minority have had formal exposure to recent software engineering ideas. Of the millions of lines of software in current defense systems, only the more recent have been created according to modern software engineering principles. The past dominates the present, prevailing over new approaches and the ideas of entrants new to the community.

There is consensus throughout the industry that to achieve major improvements in the qualities of delivered software, there must be major improvements in *practice* and, of necessity, in the *technologies* that enable improved practice.

There is an increasing flow of new and promising ideas for software engineering technologies—methods, techniques and support systems—but the bulk of these are grown from idealistic rather than practical environments and their utility is demonstrated on “toy” examples. Yet the greatest difficulties often lie in scaling demonstration prototypes to system-sized applications. These difficulties may be even more challenging than concept origination itself, but meeting the untidy, pragmatic tests of large-scale application has little theoretic appeal. Software development and support technologies developed for internal purposes may exist in many enterprises, but they are neither visible to the defense community nor likely to be easily transportable.

The experience base of today's software population lies in practicing an immature, labor-intensive discipline to create complex software systems by manual effort and art. There is at least the comfort of familiarity, if not complete satisfaction, with today's practice; as long as the job seems to get done, stability is preferable to the potential discomfort of change. Software professionals valued for their experience have a vested interest in continuing the basis of that experience. As long as contracts are won and deliverables are accepted, management perceives little necessity to invest in upsetting the status quo.

There is a gulf between the practicing population and the potential of existing and nascent software technologies. Building a bridge between these two worlds is the challenge of software technology insertion.

The concerns expressed by the Eastman report were accurate. The use of software in defense systems continues to grow at the same rapid pace that is

being experienced in the commercial sector. For instance, in 1984, software for the F-16 amounted to approximately 500,000 lines of code. By 1990, software in the F-16 had grown to 1 million lines. Estimates for the F-22 range from 1.5 to 2 million lines of code.

It would be difficult to identify a single military system whose successful operation does not depend on software. Essential weapon systems such as missiles, airplanes, tanks, submarines, and artillery are all controlled by software. Support functions such as communications, satellites, intelligence, logistics, and medical systems are also software intensive.

Likewise, the pace of technology advancement has not abated. To maintain our strategic technology advantage, we must be able to adopt the technology more rapidly than our potential adversaries.

The advantages are real. In Desert Storm, the ability to make software changes to the Patriot missile system enabled us to blunt the threat of scud missiles. Without significant change to the platform, the contractor was able to adapt the Patriot to shoot down scud missiles, even though it was originally designed as an anti-aircraft missile. Through software, the military is able to upgrade and even change the functionality of systems without changing the platforms.

While software offers the potential for enormous flexibility, that potential is often not realized when appropriate software engineering is not applied. The SEI exists to help the DoD and defense industry apply modern software engineering principles so that the full potential of software can be realized.

Example SEI Accomplishments

The SEI has addressed this challenge by working closely with the DoD and defense industry to demonstrate how to apply the best practices and technology to weapon systems. The following are a few examples of these contributions.

Capability Maturity Model™ (CMM™) for Software¹

The SEI has developed a method for software development organizations to apply total quality management (TQM) to software and to adopt the best industrial practices.

Despite the success of the TQM movement of the past decade, even companies that have won the Malcolm Baldrige Award have difficulty applying TQM concepts to software development, because it is such a new and abstract engineering activity. The SEI collected the best industrial practices into an easily understood model and transitioned the model into practice in many government and defense industry organizations. We trained people to apply this model in DoD organizations such as the Army Materiel Command, the Air Force Air Logistics Centers (ALC), the Navy Fleet Combat Direction Systems Support Activity, and defense industry organizations such as Hughes Aircraft, Texas Instruments, Loral, and Raytheon.

¹Capability Maturity Model and CMM are service marks of Carnegie Mellon University

Many of these organizations collected data on the improvements. The following table provides examples:

Tinker Air Force Base ALC	<ul style="list-style-type: none"> overall return on investment (ROI) of 7.5 to 1 90% reduction in defect rate 26% reduction in average maintenance cost tenfold (i.e., 1,000%) increase in productivity
Hughes Aircraft	<ul style="list-style-type: none"> overall ROI of 4.5 to 1 cost performance index (actual/budgeted cost of work performed) increase from .94 in 1987 to .97 in 1990 \$2 million annual reduction in cost overruns (1987 - 1990)
Raytheon	<ul style="list-style-type: none"> overall ROI of 7.7 to 1 \$15.8M reduction in rework cost (1988 - 1992) 130% increase in productivity (1988 - 1992)
GTE Government Sector	<ul style="list-style-type: none"> 360% increase in productivity (1988 - 1992) 50% to 70% reduction in trouble reports (system test and beyond)

Table 1: CMM improvement data

Many firms in commercial industry, such as Citicorp, Boeing, Hewlett-Packard, Motorola, and Xerox, have also embraced the use of the model, and many have reported similar improvements in quality and productivity, as well as significant ROI results. This is clear evidence that the approach brings the best commercial practice to the DoD.

Risk Management for Software

The SEI has helped the DoD apply risk identification and management techniques to software.

Many defense systems have historically experienced budget overruns and schedule delays because of technical and management problems that could have been identified as risks and managed. At the urging of the House Appropriations Subcommittee for Defense in 1990, the SEI developed a method for identifying and managing risks in software systems.

We worked closely with the Navy PEO-A programs and have applied the method on 38 systems at 54 different sites. The Navy captain responsible for the Navy's Airborne Command Post—ABNCP said, "I can sleep at nights knowing I'm working on the right issues." More recently the method has been applied to an Air Force program. The PEO for that program observed that before conducting a software risk evaluation, the program had never made schedule, but since conducting the evaluation, they have made the last two.

Software Acquisition

The SEI is applying its experience to help the DoD improve the way it acquires software-intensive systems.

Although the DoD develops some of its own software and maintains a large portion of it, most of the systems come into the inventory as a result of acquisition. The SEI is working with representatives of the services to develop a maturity model for program offices that acquire software-intensive systems. The purpose is to make program managers smarter customers as the DoD attempts to streamline the acquisition process.

The software capability evaluation (SCE) method was developed by the SEI, at the request of the DoD, to provide insight into software process capabilities of companies vying for contracts. Using the method, teams trained with materials developed by the SEI visit offerors' software development sites and compare the processes in use to the CMM. These results are then provided to decision makers, who incorporate these data into their selection process. Subsequent adaptation of the SCE method to provide an incentive to improve software development processes during contract execution has proved equally effective in focusing attention on the production of quality software. In the words of the Blue Ribbon Panel (BRP) that conducted a comprehensive review of the SEI for the DoD, "... the CMM and SCE have been embraced by both government and industry and have been especially useful to both."

Structural Models for Simulators

The SEI helps the DoD apply advanced software technology to its systems.

SEI work in helping a family of Air Force programs improve their ability to develop and field aircraft simulators illustrates the impact of applying sound software engineering principles to achieve the benefits of advanced software technology.

Although those who developed aircraft simulators were expert in the mathematics of simulation, they were not familiar with the application of software engineering principles. Early in the development of the B-2 simulator, the SEI was asked to assist with a technical issue that appeared to be a language problem. Because of our familiarity with the software engineering principles involved, we were able to discover that the problem was deeper. The traditional approach would not scale up to handle the complexity of the B-2.

This work led to a new design paradigm in which simulations are built from models of aircraft components and assemblies and are based on scalable computational systems. To support this strategy, structural models provide simple design patterns that regulate the behavior, composition, and coordination of software parts and assemblies. The expressive power of these patterns enables the air vehicle simulation of an aircraft as complex as the B-2 bomber to be modeled using a pattern of only five structural elements.

Structural models have matured through a decade of collaborations in the flight simulator community involving government, contractors, and the SEI. Structural models have been used extensively on acquisitions such as

- B-2 Basic Operations Trainer
- C-17 Aircrew Training Device
- Special Operations Forces Aircrew Training System
- BSY-2 Basic Operations Trainer

Companies using structural models include Loral, AAI, Hughes Training for AF and NASA, McDonnell Douglas, U.S. Navy, Lockheed Martin, and TRW.

Upon observing the design technology for the first time, a senior Air Force reviewer at a recent C-17 simulator critical design review said, "Seeing this system was my professional equivalent of being 'born again.' The review systematically addressed every concern, vague idea, and feeling I have had in over 18 years of working in simulation. This is the best example of systems engineering I have ever seen."

A young maintenance person said, "It used to take six weeks. We bid three weeks, and I finished in a day."

These are the kinds of results achievable when sound software engineering practices are applied.

SEI Contribution to Defensive Information Warfare

The SEI has been engaged in defensive information warfare since 1988, long before it became a trend.

The subject of information warfare is on the front pages of our newspapers today. With the growing use of the Internet, the vulnerabilities of our defense and civil information systems are being exploited. Although our ability to prevent attacks on our networks and survive them once they are launched is not adequate, the SEI has helped the Internet community successfully handle thousands of such attacks.

Nearly a decade ago, ARPA recognized the growing danger of automated and human-driven attacks on the Internet. The SEI assisted ARPA by developing a response team to combat these intrusions and to assist in developing the technology and awareness to prevent them. This is an example of how the SEI helps the DoD by anticipating needs and preparing a capability to respond long before the need is realized by the operating commands.

Since the inception of its response team, the SEI has responded to over 7,600 security incidents affecting tens of thousands of Internet-connected sites. In this role, the SEI helps sites identify and correct specific problems in their systems and policies, notifying and working with law enforcement agencies, notifying and working with the vendor community to correct deficiencies in their products, and coordinating incident-response activities with other sites affected by the same incident. In addition to response, the SEI warns the community of vulnerabilities and widespread attacks through its advisory service. The SEI has issued 119 advisories with direct distribution to over 100,000 sites and secondary distribution to millions of others.

The success of the SEI in incident handling and its acceptance by the various communities with which it works are a direct result of its neutral position in a university-based FFRDC. In this unbiased and accessible position, the SEI has served as a model for others to emulate, has helped spawn over 50 other incident-response teams including a team for each of the services, and has played a lead role in bringing these teams together into a cooperative federation known as the Forum of Incident Response and Security Teams.

Law enforcement and investigative agencies have unique requirements for understanding the security mechanisms within modern computer systems. The SEI has delivered special computer security workshops to the U.S. Secret Service and the Federal Bureau of Investigation.

The SEI has developed a working relationship with 32 computer system vendors and helps them detect and correct vulnerabilities in their products. Special workshops are held to apprise vendors of existing threats and to stimulate the move to improved security features in commercial products. Our special role in this relationship can be seen from a representative example:

The SEI was notified of a vulnerability in a UNIX operating system control program. The vulnerability allowed an attacker to gain root, or privileged, access to any computer running this program, and the vulnerability was being actively exploited. This program was an integral part of the majority of UNIX systems currently in use around the world, particularly in the United States. Gone uncorrected, this problem would have made most UNIX systems vulnerable to attack. The SEI notified all UNIX vendors of the problem, helped them develop interim patches, coordinated those interim solutions among the vendors to help them develop the best possible solution, and then helped them distribute those solutions through the advisory process. The unique, non-competitive position of the SEI in the community allowed us to stimulate, facilitate, and then coordinate prompt corrective action by the vendor community. Our actions and position in the community helped close a major vulnerability and avoid what could have been a major security problem to the Internet community.

Private Industry and Government Cannot Do this Work

Two studies, conducted 10 years apart, concluded that private industry and the government could not effectively do the work of the SEI and that the SEI's status as an FFRDC is integral to its mission. The first study was conducted in 1983 for the DoD and documented in the Eastman report. The second study was conducted in 1994 for ARPA by an independent Blue Ribbon Panel (BRP). The BRP provided input for a comprehensive review, required by the Federal Acquisition Regulations, before renewal of the last SEI contract. The BRP evaluated the need, performance, and appropriateness of the SEI.

Both panels agreed that industry organizations would have difficulty doing the work performed by the SEI, for the following reasons:

- **Industry organizations compete with one another.** The SEI does not compete with the defense industry, professional service organizations, commercial vendors, or other FFRDCs. More than simply not competing, the SEI attempts to transition technology through professional services companies and FFRDCs. Rather than allowing client organizations to become dependent on the SEI for a specific technology, the SEI actively works itself out of businesses by making other organizations self-sufficient. For example, the SEI licenses its assessment method to a number of professional services companies. Likewise, the SEI has trained MITRE and Defense Information Systems Agency (DISA) personnel to use the method in support of Air Force Materiel Command (AFMC) Electronic Systems Center (ESC) acquisitions. In essence, the SEI creates a technology and market for that technology, then trains organization to replace the SEI in that market. No board of directors of a profit-making corporation would allow this method of operation.

- **Proprietary and competitive concerns would inhibit individual contractors from making solutions to technical problems widely available.** The SEI, as an FFRDC, is free to bring a broad perspective to bear on the problems that concern government and industry. In working with government and industry, the SEI helps identify technical risks, jointly seeks solutions that reduce those risks, and transitions the solutions to common practice.
- **Private industry would have difficulty acting as an unbiased source in working to improve the state of the practice in software engineering.** Private industry organizations would have natural preferences for their own technology, would likely prefer an organization that provides them business, and would naturally be influenced by potential follow-on work that builds upon their existing technology. As an independent FFRDC, the SEI can maintain its position as an objective third party to function effectively as a center of excellence in software engineering technology.
- **The SEI has demonstrated the ability to obtain and protect proprietary information that industry gives to the SEI but wouldn't give to other companies.** The SEI can also protect information sensitive to government procurements. These attributes have proven essential for several SEI activities, including computer emergency response, process assessments, measurement, and risk assessments.

Industry recognizes the SEI reputation as a source of technical expertise that facilitates the resolution of security problems without vendor bias or the constraint of competitive issues. As a result, the SEI is in a unique position of trust and confidentiality with industry. For example, when a commercial response team wrote a letter to a private company requesting a status update on a vulnerability, the company in very strong terms said that the SEI was the only organization that the vendor would communicate with regarding security issues in process. Another example is that at the request of a multinational company, the SEI discussed a new security product that the company was developing and was able to identify a security issue that the company had not previously considered.

The SEI has collected data from over 400 software organizations that characterize their software process strengths and weaknesses. Many of these organizations have provided data over a number of years. The SEI uses this information to analyze trends and provide information to the software engineering community at large. This allows organizations to answer questions such as "Where am I?" "How do I compare with others?" and "What are my leverage points for improvement?"

The two previously mentioned panels agreed that government organizations would have difficulty doing the work performed by the SEI, for the following reasons:

- **There is no government agency charged with the mission and charter of software engineering technology transition.** Because of the need to deal impartially with all parts of the government as well as industry and academia, the SEI must be (and is) independent and focused across a broad range of activities that transcend the mission of any one government agency or service.

- The government has had difficulty developing a critical mass of highly qualified personnel with the necessary skills and background. Because of its personnel, budgeting, and training practices, the government cannot recruit and retain an adequate number of skilled personnel who have the long-term, continuous experience that the SEI staff has.
- The SEI mission requires a staff with significant experience with software systems. Since the SEI is precluded from building such systems, the staff cannot gain this direct experience at the SEI. Therefore, the SEI must hire appropriately experienced staff. This high level and diversity of experience ensures that SEI work is relevant to practice and allows the SEI to conduct business more effectively with the different cultures and modes of operation within industry, government, and academia.

DoD FFRDC Management Plan

The 1994 DoD FFRDC Management Plan addresses the concerns of Congress regarding improved management of FFRDCs and provides prudent oversight. It ensures that the work of each FFRDC is appropriate to its core mission.

The DoD has always managed the SEI carefully. The SEI has never accepted work outside its mission, and the DoD has sufficient reviews in place to ensure that the SEI never will do so. In this sense, the new management plan simply formalizes what ARPA and the Air Force already do.

ARPA, the primary sponsor of the SEI, provides general guidance and oversight to ensure contract compliance and technical excellence, and to be certain that SEI activities meet DoD needs. ARPA also reviews and approves SEI plans, participates in quarterly financial and program management reviews, and provides in-depth technical reviews twice a year for each SEI program.

The Air Force, the administrative agent for ARPA, implements that strategic guidance and oversees SEI day-to-day activities. In addition, a Joint Advisory Committee, composed of senior executives from the Army, Navy, and Air Force, reviews the SEI work plan and provides recommendations on strategies, needs, and priorities. The SEI also has a distinguished Board of Visitors that is responsible for reviewing plans and accomplishments.

The management plan provision that provides guidelines for the use of fees does not affect the SEI because we do not receive a fee. The management plan provision that requires an independent review of each FFRDC most likely will not affect the SEI, since ARPA already conducted a six-month independent review of the SEI in 1994 that covered the same issues.

The Impact of Ceiling Constraints on the SEI

The SEI began operation in 1984 with a DoD-approved plan for managed growth. The SEI ceiling was set at 250 software engineers based on recommendations contained in the Eastman report commissioned by the Undersecretary of Defense. We recognized that to serve the DoD mission most effectively, the SEI needed to attract and retain senior-level software engineering professionals. As a result, SEI staff growth occurred slowly and

was carefully managed as we successfully developed a base of core technologies and capabilities.

The congressional actions to impose funding ceilings for FFRDCs stopped the SEI planned and managed growth before it was able to mature. The original ceiling of 250 software engineers, which was never reached, has been reduced to 155. This represents an actual reduction of 20 percent from our 1993 staffing level of 192—a loss of nearly 40 experienced professionals.

This restriction on the SEI's planned growth is of particular concern given the explosive growth in DoD software. Our original ceiling was based on estimates of defense software needs and use of the Internet that have proven to have been understated. For example, in 1984, the year the SEI was established, DoD software expenses were estimated at \$5 to \$6 billion; in 1995, DoD expenditures on software were estimated at \$42 billion annually. Similarly, the Internet was used primarily by the military and academic communities in the mid-1980s. Now there are more than 35 million users worldwide!

The SEI's experience with computer emergency response illustrates the impact of this unexpected growth in the Internet on our ability to serve the DoD mission, particularly in light of the FFRDC ceiling reductions. When the SEI established its emergency response team in 1988, 3 members of the SEI technical staff were assigned to respond to computer security incidents. Nearly 8 years later, use of the Internet has grown by 2,500 percent, and there has been a 2,000 percent increase in the number of network intrusions. By comparison, because of ceiling constraints, the response team staff could increase from 3 to only 14. And at the same time, we are being asked to do more: build on our experience to improve the state of practice in protecting networked computers in support of ARPA's Defensive Information Warfare Initiative and the rapidly increasing requirements of DoD defensive information warfare.

Although the consistent reduction in ceiling over the past four years has not increased the SEI turnover rate, it has caused serious difficulties in retaining quality people and in recruiting. A good example is the individual who managed the development of the SEI emergency response team and testified before the House Subcommittee on Science, Space, and Technology in 1994. That subcommittee subsequently urged the SEI to expand its incident-response activity to meet growing demand. This individual presented a responsible plan for responding to the subcommittee's encouragement and for taking a more proactive role in preventing attacks. However, because of decreasing ceiling, we were unable to execute the plan. In frustration, he left to accept a job in the commercial sector. While we could not have matched the compensation he received in the new job, he has confirmed that he would have stayed at the SEI had we been able to permit him to execute his plan. It took nearly a year to find a suitable replacement, who then had to develop the necessary context to be effective.

Mr. WELDON. Thank you, Mr. Druffel.

And our final witness today is Dr. Gary Smith, director of the Johns Hopkins Applied Physics Laboratory. Welcome.

STATEMENT OF GARY L. SMITH, DIRECTOR, JOHNS HOPKINS APPLIED PHYSICS LABORATORY

Mr. SMITH. Thank you, Mr. Chairman. We really do appreciate the opportunity to testify before this committee. These are some very important topics. They have some long-term implications, and we applaud your efforts to give everything a fair hearing on this. I too have submitted a written testimony for the record, and I request respectfully that it be so entered.

Mr. WELDON. Without objection.

Mr. SMITH. The university-affiliated research centers recognize that there are legitimate questions and concerns regarding these institutions. Make no mistake, we know that we occupy a privileged place, and we recognize too that with privilege goes responsibility, so we are trying to respond to that responsibility.

For over 3 years, the Navy and its university laboratories have been working to address these questions and concerns while at the same time, they have been seeking to ensure that the essential capabilities these institutions possess remain vital and available to the many sponsors that have depended on them for decades and that continue to depend on them and will for the future.

Last year, the then-Assistant Secretary of the Navy for Research, Development and Acquisition, Nora Slatkin, someone whom I believe many of you know, directed the following actions regarding the Johns Hopkins University Applied Physics Laboratory: Each Navy task that we were conducting was to be examined for the possibility of having it competed. Furthermore, the laboratory was required to be demonstrably uniquely qualified to perform that task if that task was to remain with the laboratory. All non-Navy work was to be removed from the Navy contract. Sponsors were urged to compete those tasks or, if they chose not to compete them, to contract for them separately. The core competencies that we had been providing to the Navy and to our other sponsors were reviewed by the Navy, and it was decided that the Navy only needed six; we had nine. The other three were in support of other non-Navy sponsors, and the Navy no longer chose to support them. Our contract term was shortened; we have a 1-year contract with two 1-year options. Furthermore, the university was required to begin capitalizing all of its general purpose equipment.

In effect, many of the special arrangements that had been underlying our relationship were removed, not because it was deemed inappropriate but because it was deemed that it was time for us to better align our work and the administration of our contracts. It was deemed that that would be better management in today's climate. We have been meeting with several key members of the Congress and with staff to try to explain to them all of these changes over the past many months. We appreciate the openness with which those staff and those members have been willing to listen as we have explained these changes that we have been making.

More recently, Dr. Kaminski and Dr. Jones have very patiently and very carefully worked with the various primary sponsors in the

services, with the service acquisition executives, and with the university-affiliated research centers to develop the current management plan for these centers. From my perspective, their goal has been worthy. They have been trying to produce a plan that adequately and appropriately reflects the changes already set in motion by the Navy and its labs while at the same time solidly responding to DOD needs as well as the questions and concerns in Congress and elsewhere. We applaud their efforts.

Let me talk a little bit about the Johns Hopkins University Applied Physics Laboratory. Why do we exist? One of the questions that you stated that was of concern to the Congress was should these organizations continue to exist? We exist pure and simple to provide a service to the public. The Johns Hopkins University general purpose can be stated as public service through the discovery, the dissemination, and the application of knowledge for the betterment of people everywhere. We share in that mission. We share in it in a unique way: we are here to enhance the national security through the development and application of science and technology. We have done that for 54 years this month. You mentioned the fact that CNA had been established in 1942; so were we. We have been around for awhile, and we have been providing, I think, a worthwhile service for all of those 54 years.

I am not going to go through a description of all of our core capabilities or our competencies or all of that, but I would like to talk about some of our more general characteristics, because I think it is important that they be recognized. Of course, as part of the Johns Hopkins University, we are nonprofit. We have a no-growth policy. That no-growth policy has been in place for over 30 years. Our staff size has been essentially constant within a very few percent for over 30 years. We are at about 2,700 full-time regular staff, and that is where we have been. We did not grow, and we have only shrunk a small amount. I should note that in response to changes in funding, we did have a reduction in force of our staff of about 61 people back in 1993 and another 158 people last year. It was painful, no more painful for us than for anybody else, but it was something that we had to do.

We do not respond to RFP's in competition with industry; we do not team with industry in responding to RFP's, and we do not take funding from industry. We are like Consumers Union: we do not take any advertising. We do compete in peer-reviewed science and technology. We send in proposals to ONR, to AFOSR, to ARO, to NIH, to NSF. We respond to broad agency announcements; we respond to announcements of opportunity from NASA. These things are essential to us and to our sponsors because they keep us on the cutting edge of science and technology. They are a small part of what we do in every respect.

We operate under several task order contracts with several major sponsors. Not very long ago, we operated under one task order contract with the Navy. These contracts are awarded noncompetitively. We have no line-item funding, and we have no assured income. All of our funding comes from programs, Government programs. These contracts that we operate under are only vehicles that permit tasking and funding. They do not assure a single dollar to us, and no one tracks to make sure that the ceilings that are

set in those contracts are filled. We have not filled the ceilings in our contracts for several years.

Each year, over 200 separate sponsors have to decide anew whether we are the right place for them to come to get their problems addressed and solved. They make those decisions on the basis of the quality of our work, our responsiveness, and our costeffectiveness as with any other commercial contractor. And by the way, we operate under commercial cross-principles. We are encouraged to develop new concepts and capabilities and maintain technical excellence through a modest IR&D contractual arrangement consistent with the FAR. The university owns the land and the buildings in which we work. Their value is about \$90 million. That is a very significant investment for a private university. The university, as I mentioned, now buys all of our general-purpose equipment. The average investment per year is about \$12 million. We are not part of the Government laboratory infrastructure, and our size is determined entirely by the needs of our sponsors. All of these characteristics contribute to levels of institutional independence and objectivity that are two of our most important and sought-after qualities.

I am going to skip over a lot of this and move to some of the questions that you posed in your letter to me asking me to come in and testify. You asked me first to cite the value added by our special arrangement with the Department and why this relationship is necessary. For us today, the only special arrangement we continue to have with the Department is that our contracts are awarded on a noncompetitive basis, and, of course, those contracts are awarded entirely consistent with the provisions of the Competition in Contracting Act, which allows for exceptions in cases such as ours. In that sense, we have no special arrangement. But as I pointed out in the beginning, we recognize that we are privileged in these contract arrangements, and therefore, we have a responsibility, and that is why we have all of those characteristics that I earlier outlined.

Mr. WELDON. Can I ask you a question here?

Mr. SMITH. Yes, sir.

Mr. WELDON. We have 6 minutes on a vote. How about if I recess, and we will come back, and you can finish up your testimony so that Pete and I can make this vote.

Mr. SMITH. Yes, sir.

Mr. WELDON. Is that fair?

We will recess the hearing until we vote on this suspension.

[Recess.]

Mr. WELDON. The subcommittee will again come to order. We apologize for having run over for the vote. There was an expected second vote which did not materialize. But the extended delay was because of the announcement of our good friend and colleague Jim Bunning at 2:25 today being inducted into baseball's hall of fame. So we had to stay over and give Jim a nice round of applause. In Philadelphia, he is like a folk hero, so I had to be there for that little exercise. [Laughter.]

Mr. WELDON. With that, Dr. Smith, we will let you continue your comments.

Mr. SMITH. Thank you, Mr. Chairman. I only have a couple of remaining points. Let me reiterate that in your letter, you asked me to cite the value added by our special arrangement with the Department. And as I said, in our view, our only remaining special arrangement is that our contracts are awarded noncompetitively. And in that case, our contracts are consistent with the FAR.

But they are awarded noncompetitively. Let me speak to that competition issue. As I said before, we do not compete with industry in response to RFP's; we do not take funding from industry; we do not team with industry in response to RFP's. And the reason for that policy, self-imposed, longstanding, is that we are very, very conscious of the need for us to maintain our independence and objectivity. The reason, pure and simple, is that in the bulk of our work, the majority of our work, particularly that work involving our core competencies for the Department of Defense, we work as a member of a team. That team includes our sponsors, other labs like Lincoln, industry, the operating forces. What we do as a team is we accomplish the RDT&E necessary to understand, define, and solve the problems facing all of us. This team is generally a long term association. The tasking changes year to year, as it must in any kind of an R&D effort, but the association is long term. Our place in that team is generally that of a trusted technical agent. We bring a level of hands-on technical expertise, an independence, and an objectivity to the task that our sponsors continue to foster because they have real needs in these areas.

If we were competing with industry or teaming with industry in response to RFP's or taking funding from industry, we simply could not fill the role. Neither Government nor industry would be able to trust us with privileged information as they do now and as is so important to rapid progress on programs such as the cooperative engagement capability, which I am sure you have heard about recently. In this very important sense, we are and we cherish being partners with our sponsors in a long-term strategic relationship.

You also asked me to comment on the efficacy of the Department's plan for our institution and its impact on us. Let me say at the outset as I said in the beginning that I applaud the care and the attention that Dr. Kaminski and Dr. Jones have put into the development of the plan. But I would be less than candid if I did not admit that I would prefer that there was no management plan for us. Frankly, I wish that there were no such designation as UARC. The reason is pure and simple: the Applied Physics Laboratory is tightly managed by its sponsors, by the Navy, and by the Johns Hopkins University, and it has been for 54 years. Also, the Applied Physics Laboratory is an integral part of the Johns Hopkins University. It is a full partner with the other divisions, including the School of Medicine, the G.W.C. Whiting School of Engineering; the Zanvyl Krieger School of Arts and Sciences; the Paul H. Nitze School of International Studies, et cetera. We are not simply affiliated with Johns Hopkins.

We are already subject to and we comply with the existing management controls applicable to the rest of the Defense contractor establishment. For example, there is a 15-person Naval Technical Representative office and a 7-person Defense Contract Audit Agency office on-site at the laboratory. And, of course, we also continue

to observe our self-imposed ceiling on our staff. And I cannot reiterate strongly enough that we have no guaranteed funding, so we must keep our costs in line, or our sponsors will no longer come to us.

The management plan under discussion today, carefully crafted though it is, will add another layer of management control. Can we live with it? The short answer is if it is intelligently implemented, yes. With what impact? In the near term, it will add a degree of overhead on our part and on the Government's part beyond what is required of other DOD contractors. I regret that. But I am more concerned with the longer term. Currently, in spite of all of the changes that we have overcome and that I have summarized for you briefly today, we remain an attractive employer. Our position as a division of the Johns Hopkins University, the quality of our existing staff, and the importance and the challenging nature of the work we do enable us to attract and retain a very high-calibre group of engineers and scientists and other professionals to serve our sponsors' needs. Over time, however, the management plan—any management plan—could serve as a vehicle for increasing bureaucratic controls that might slowly change the nature and character of our institution and the others subject to this plan, in particular, the quality and the innovative capability of our staff will diminish if the scope of our activities and our responsiveness are restricted too much, and the Department of Defense and this country will be the ultimate loser.

In summary, we can live with the plan today, but I hope you will reflect on the fact that, over time and with additional controls and oversight beyond the existing essential amount needed for sound stewardship of the public trust, the fundamental character of these institutions may be eroded. I might note that in these times of acquisition streamlining and less Government oversight that we seem to be adding controls and management to these dedicated organizations while DOD and most other areas move from regulation and enforcement to incentives.

I sincerely thank you for the opportunity to address the committee.

[The prepared statement of Mr. Smith follows:]

STATEMENT

DR. GARY L. SMITH
DIRECTOR

THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY

MILITARY RESEARCH AND DEVELOPMENT SUBCOMMITTEE
HOUSE COMMITTEE ON NATIONAL SECURITY

March 5, 1996

Mr. Chairman, thank you for the opportunity to testify before this committee on the DoD Management Plan for University Affiliated Research Centers. I am Gary Smith, the Director of the Johns Hopkins University Applied Physics Laboratory, the largest of these centers.

These institutions recognize that there are legitimate questions and concerns regarding their roles and missions in a dramatically changing defense environment.

For over three years the Navy and its university laboratories have been working to address these questions and concerns, while seeking to ensure that the essential capabilities they possess remain vital and available to the many sponsors that continue to depend on them as they have for decades.

More recently, USD (A&T) and DDR&E have patiently and carefully worked with the various Primary Sponsors in the Services, with the Service Acquisition Executives, and the UARCs to develop the current Management Plan. From my perspective, their goal has been to produce a Plan that adequately and appropriately reflects the changes already set in motion by the Navy and its laboratories, while at the same time solidly responding to DoD needs as well as the questions and concerns in Congress and elsewhere.

Let me answer some of the questions I have heard about JHU/APL.

Why do we exist?

The general purpose of the University can be stated as public service through the discovery, dissemination, and application of knowledge for the betterment of people and society everywhere. As part of the University, we share in that purpose through the development and application of science and technology to enhance the security of the United States and to solve other important public-sector problems.

What are some of our important characteristics?

We are nonprofit. We have a no-growth policy; our staff size has been essentially constant within a few percent for over thirty years, about 2700 FTR staff. I should note that we had a RIF of 61 staff members in early 1994 and another of 158 staff members in May, 1995. We do not respond to RFPs in competition with industry, we do not team with industry in responding to RFPs, and we do not take funding from industry. We do compete in peer-reviewed science and technology, and we do compete in the area of ideas.

We operate under several task order contracts with several major sponsors. These contracts are awarded noncompetitively. We have no line-item funding and no assured income. All of our funding is derived from government programs, and each year over 200 separate sponsors have to decide anew whether we are the right place for them to come to get help on their programs. We operate under commercial cost principles.

We are encouraged to develop new concepts and capabilities and maintain technical excellence through modest IR&D contractual arrangements consistent with the FAR. The University owns the land and buildings in which we work, valued at about \$90 million and it buys all general purpose equipment with an average investment per year of about \$12 million. We are not part of the government laboratory infrastructure and our size is determined strictly by the needs of our sponsors.

All of these characteristics contribute to levels of institutional independence and objectivity that are two of our most important and sought-after qualities.

What are our core capabilities?

Complex Operational Systems Performance Evaluation
Undersea Warfare and Related Oceanography
Space Systems, Instruments, and Experiments
Tactical Combat Systems and Guided Missiles
Coordinated Theater-Level Warfare Systems
Battlefield Information Management and Information Warfare Systems
Mission/Engineering Evaluation Using Models, Simulations and Operations Analysis Techniques
Responsive Competency-Based Technology Development

What are the major program areas in which we work?

Air Defense
Space Science and Technologies
Submarine Security and Undersea Warfare
Fleet Ballistic Missile Strategic Systems
Ballistic Missile Defense
Strike Warfare and Air Weapons
Command and Control Warfare
Requirements Analysis

What kind of work do we do?

There is a very broad spectrum of activities at APL. On the one hand, we do basic research, both experimental and theoretical, in areas such as information science, physical oceanography, and space science. On the other, we go to sea or move into the field to test and evaluate new concepts, techniques, and systems. For example, just a few weeks ago we conducted a major test, with the Navy, Marines, and Army, of the Cooperative Engagement Capability system at Barking Sands Pacific Missile Test Facility in Kauai. The test was called Mountaintop. I hope you've had a chance to be briefed on it. When necessary to meet a sponsor's objectives, we develop technology, as we did in the case of the Mid-Course Space Experiment spacecraft we built for BMDO. Whenever possible we apply available technology, e.g., in a Navy Telemedicine experiment recently conducted among a deployed Battle Group, APL, and the JHU School of Medicine. We also perform systems analysis from an engineering perspective, such as in the Cost and Operational Effectiveness Analysis of the Navy Surface Fire Support capability that we recently concluded.

What are some of the major current programs in which we play a significant role?

Cooperative Engagement Capability; AEGIS Combat System; Integrated Ship Defense System; Near Earth Asteroid Rendezvous; Advanced Composition Explorer; Thermosphere, Ionosphere, Mesosphere, Energy and Dynamics (TIMED); Mid-Course Space Experiment; SSBN Security; Integrated Undersea Surveillance System; Force Anti-Air Warfare Coordination Technology; Weapons of Mass Destruction Counter-proliferation; Tomahawk Weapon System; Ballistic Missile Defense Test and Evaluation; Active Geophysical Rocket Experiment; Joint Advanced Strike Technology; Surface Combatant 21 Cost and Operational Effectiveness Analysis; Arc Fault Detector; and MILSTAR Engineering.

What sets us apart from other organizations?

Several things. First, our extensive breadth of capabilities and our decades-long involvement in broad programs of long-term research and development of major Navy systems. The scope of our efforts extends across several areas of science and technology, includes many different warfare elements, and involves many types of activities, from basic research to full-scale operational system testing.

JHU/APL has developed a comprehensive understanding of most aspects of missile, radar, sonar, space, and submarine detection technology, and the characteristics and limitations unique to the military operating environment. The technical staff of APL includes specialists in the various scientific and engineering disciplines embodied in all these diverse areas, as well as systems engineers who can direct teams engaged in the development of complex combat and even multiple-ship systems. A principal strength of

the Laboratory is its ability to merge the knowledge of technology with the knowledge of operational requirements.

Further, the Laboratory has proven capability not only in research and development, but also in the resolution of problems related to the production of systems, to the introduction of equipment into the fleet, to maintenance, and to logistics. In bringing its talents to bear on the many diverse problems encountered in meeting DoD operational needs, JHU/APL's efforts have been distinguished by the following special characteristics:

1. Applying scientific methods to the technical evaluation of operational systems. The orientation toward formulating and analyzing critical experiments to obtain basic understanding of detailed system performance is associated with the general spirit of critical inquiry derived in part from APL's role as part of the University.
2. Orienting research to achieving practical military objectives, with the general policy of coupling research activities closely with applications, to obtain products of direct applicability to Navy and defense needs.
3. Integrating systems composed of multiple complex military devices involving diverse disciplines. The Laboratory has attracted and trained versatile key project leaders who understand the complex technology involved and make the compromises necessary to obtain a practical and balanced approach, leading to a product specification.
4. Participating in the development of complex technical programs from concept to operational deployment.

In your letter to me, you asked me to cite the value added by our special arrangement with the Department, and why this relationship is necessary.

For us the only "special arrangement" we continue to have with the Department is that our contracts are awarded on a noncompetitive basis. Of course, our "sole-source" contracts are entirely consistent with the provisions of the Competition in Contracting Act, which allows for exceptions in cases such as ours. In that sense we have no "special arrangement." But let me speak to the competition issue. First let me acknowledge that there are some very fine laboratories that do most of their work through competitively-awarded contracts. Some are associated with universities, some are not. Battelle Labs and Southwest Research Institute come readily to mind. I would characterize much of what they do as fee for service research and development.

We do not fit that model. Rather, we tend to work as a member of a team, with our sponsors, other laboratories, industry, and the operating forces, to accomplish the RDT&E necessary to understand, define and solve the problems facing us. This is generally a long-term association, even though the tasking changes from year to year. Our place in the team is generally that of a trusted technical agent. We bring a level of hands-on technical expertise, independence, and objectivity to the task that our sponsors continue to foster because they have real needs in these areas. If we were competing with industry, teaming with industry in response to RFPs, or taking funding from industry, we simply could not fill this role. Neither government nor industry would be able to trust us with privileged information as they do now, and as is so important to rapid progress on programs such as CEC. In this very important sense we are partners with our sponsors in a long-term strategic relationship.

You also asked me to comment on the efficacy of the Department's plan for our institution and its impact on us.

I would be less than candid if I didn't admit that I would prefer that there was no Management Plan for us. Frankly, I wish that there was no such designation as "UARC." The reasons, pure and simple, are that: (1) the Applied Physics Laboratory is tightly managed by its sponsors, by the Navy, and by The Johns Hopkins University, and (2) the Applied Physics Laboratory is an integral part of The Johns Hopkins University, a full partner with the other Divisions, including the School of Medicine, the G.W.C. Whiting School of Engineering, the Zanyl Krieger School of Arts and Sciences, the Paul H. Nitze School of Advanced International Studies, etc. It is not simply "affiliated" with Johns Hopkins.

We are already subject to and comply with the existing management controls applicable to the rest of the defense contractor establishment. For example, there is a 15-person Naval Technical Representative Office and a 7-person Defense Contract Audit Agency Office on site at APL. Of course we also continue to observe our self-imposed personnel ceilings, and we have no guaranteed funding so we must keep costs in line or sponsors will no longer come to us.

The Management Plan under discussion today will add another layer of management control. Can we live with it? Due to the care with which it was generated, and assuming it is intelligently implemented, the short answer is, yes. With what impact? In the near term, it will add a degree of overhead on our part and on the government's part beyond what is required of other DoD contractors. I regret that. But I am more concerned with the longer term.

Currently, in spite of all the changes we have undergone, we remain an attractive employer. Our position as a division of The Johns Hopkins University, the quality of our existing staff, and the importance and challenging nature of the work we do enable us to attract and retain a very high caliber group of engineers, scientists and others to serve our sponsors' needs. Over time, however, the Management Plan could serve as the vehicle for increasing bureaucratic controls that might slowly change the nature and character of our institution and the others subject to this Plan. In particular, the quality and innovative capability of our staff will diminish if the scope of our activities and our responsiveness are restricted too much - and the Department of Defense will be the ultimate loser.

In summary, we can live with the plan today. But I hope you will reflect on the fact that, over time and with additional controls and oversight - beyond the existing essential amount needed for sound stewardship of the public trust - the fundamental character of these institutions may be eroded. I might note that in these times of acquisition streamlining and less government oversight, that we seem to be adding controls and management to these dedicated organizations, while DoD, in most other areas, moves from regulation and enforcement to incentives.

I sincerely thank you for the opportunity to address the committee.

Biography of Dr. Gary L. Smith

Dr. Gary L. Smith became the sixth Director of The Johns Hopkins University Applied Physics Laboratory on July 1, 1992. Dr. Smith was trained as a nuclear physicist and has spent his career at the Laboratory in a series of increasingly significant technical and managerial positions.

Dr. Smith came to the Laboratory in 1970, initially working in theoretical and experimental research relating to acoustic and nonacoustic detection of submerged submarines. He was elected to the Laboratory's Principal Professional Staff in 1978. In parallel with his important research achievements, he earned meaningful administrative responsibilities. In 1979, he became an Assistant Department Supervisor in the Submarine Technology Department, and in 1981 he assumed the additional role of Program Manager of the SSBN Security Technology Program. Three years later, he became Associate Department Supervisor. In 1988, he moved to the Director's Office, soon thereafter becoming Assistant Director for Research and Exploratory Development, then Assistant Director for Research and Programs, Associate Director in January of 1991, and Director in July of 1992.

Dr. Smith is active in numerous professional societies and has been involved as well in the Continuing Professional Programs of The Johns Hopkins University Whiting School of Engineering. He served as Chairman of the Joint DARPA/SSPO Task Force on Magnetohydrodynamic Phenomena in 1980-1981, he has served on the Editorial Board of the Johns Hopkins APL Technical Digest, and he was elected to the JHU/APL Advisory Board in 1982 and in 1988. In 1989 and 1990, Dr. Smith served on the Navy's Quo Vadis II Panel.

Dr. Smith is also active in his community. He has served as a Cub Scout Packmaster, President of the PTA of Hammond Middle school, Chairman of the Howard County, Maryland 1994 United Way campaign, member of the United Way Community Partnership Board of Howard County since 1992, member of the Board of Directors of Leadership Howard County since 1992, and Chairman of the Youth Leadership Steering Committee of that board in 1995 and 1996, and member of the Board of Directors of The Columbia Foundation since 1992.

Dr. Smith was born in South Dakota and grew up in Illinois. Following four years in the Navy, he attended the University of California at Davis, where he received his Bachelor's, Master's, and Doctorate degrees in physics. He was awarded membership in Phi Beta Kappa, Phi Kappa Phi, and Sigma Xi and is included in American Men and Women of Science. Following his work at UC-Davis, he became a National Research Council Postdoctoral Research Associate at the Naval Research Laboratory. Shortly after coming to the Applied Physics Laboratory, Dr. Smith and his family moved to Howard County, Maryland. He and his wife, the former Claire Valine, have three grown children and eleven grandchildren.

Mr. WELDON. Thank you, Dr. Smith, and let me thank each of you for your testimony, and again, I apologize for the break that we had to take for the vote.

I do have some questions, and I am sure the other members as well have questions. But I will start off with Dr. Smith. Your statement kind of leads into my first question that other members have asked me about, and maybe it is my own personal problem, that is, understanding the structural difference between the Lincoln Lab and the Applied Physics Laboratory at Johns Hopkins. You are both affiliated with a national technological university; you both do a substantial amount of work for one service; you both operate under the same management tenets for DOD. What is the difference? One is a university-affiliated research center [UARC], and one is an FFRDC. So maybe it is me, but can you tell me what the difference is?

Mr. SMITH. We are both university laboratories. I think we are both high-quality technical institutions. We both serve the Department of Defense and other Government sponsors, and we think we serve them very well. We were a FCRC, a Federal contract research center, which was the forerunner of the FFRDC's, at the same time that the MIT Lincoln Labs was a Federal contract research center [FCRC], and several other institutions were. We and others were taken out of that category at the instigation of the Navy and the director, defense research and engineering [DDR&E].

Mr. WELDON. Was there a reason for that? Will you get into that?

Mr. SMITH. If I may, I would like to read for you testimony given by the director of defense research and engineering in June 1976 having to do with the Applied Physics Laboratory at Johns Hopkins and the Applied Research Laboratory at Penn State. There are about four paragraphs in this particular thing. The last paragraph says the following: "In light of the normal Navy university contractual relationships under which these two laboratories exist"—again, this is ARL Penn State and APL Johns Hopkins—"the DOD should cease referring to or considering them FCRC's. Their business should continue to be awarded under ASPR procedures for universities. Any matters relating to the contracting proprietary information and privileged intelligence position should be the responsibility of the activity awarding the contract." And there were precursor statements as to why these institutions were sufficiently carefully managed that they did not think that there was need for them to be subject to the controls and restraints imposed on FCRC's.

The next section of this report goes on to deal with MIT Lincoln Laboratory. I would prefer that—

Mr. WELDON. Absolutely.

Mr. SMITH [continuing]. Mr. Morrow address the question as to why Lincoln Lab chose to stay on as an FCRC and then an FFRDC.

Mr. WELDON. And not only from the historical standpoint, but let us look at today. I mean, is there some advantage to being a UARC over an FFRDC or vice versa? And if so, what is it? I mean, I just do not understand the nuances of the differences between the two. That is my point.

Mr. SMITH. The university-affiliated research centers have not been subjected to the same degree of controls, caps on staff and funding that the FFRDC's have been subjected to. We operate more as an independent, stand-alone DOD contractor, and we have throughout our history. The FFRDC's are subject to those caps.

Mr. WELDON. But that is not a difference in how you operate; that is a difference in what Congress has done to you. So I guess the point is that I am just trying to understand this differentiation in terms of the policy of the Defense Department back in the seventies or eighties or even today in terms of having a difference.

Mr. SMITH. There are differences in the way in which we are administered; there are differences in the way in which we are funded. Those differences are the fact for all of these institutions. Not any of us is like any other. We are all unique in many ways. There are some similarities, but if you look at the FFRDC's and you look at the university-affiliated research centers, what you will see are groups of institutions with a wide range of differences, and there is some overlap between them. There are some differences on the mean, but there are some substantial similarities in the variances.

Mr. WELDON. Let us let Mr. Morrow answer the question from MIT in perspective.

And in your answer, Mr. Morrow, would you also hit upon why it is that Lincoln Lab has its own tech-based Program Element [PE] number, and neither the DOD labs nor the UARC's. I do not understand that either, so perhaps you could hit that as well.

Mr. MORROW. There is the difference between the two organizations in the form of contract that was established then and still exists today. The Lincoln Laboratory operates as part of the university system under 821, which is the basic FAR provision for university research of the classical academic variety. Under that arrangement, there is no IR&D allowed, that is, you cannot get IR&D on an 821 contract, whereas, under a commercial contract or the normal industrial one, which is the way Johns Hopkins APL operates, you can get IR&D. At the time that the decisions were made in the midseventies about which organization would go which way, MIT clearly wanted to keep Lincoln as an integral part of the institution so that faculty ran it like myself and that the research staff were all part of the research staff of the institute.

That being the case with no IR&D, this separate line arrangement, which in effect takes the place of IR&D, is utilized. So it stems back to a difference in the contract and the form in which we started out. Now, we did agree to at that time back in the seventies to operate under a manpower ceiling, and that is the way the institute wanted us to run as well because MIT has no desire that Lincoln Lab grow without size. They do not want to have a JPL situation where JPL is a billion-dollar operation, and the university is a \$120 million operation. They want to see Lincoln stay the size that it is right now. So they, too, wanted a manpower ceiling.

So you might say when Mal Curry wrote those words and got Congress to agree with them, it was a parting of the ways between the two organizations basically having to do with the contract form that existed prior to that time and still exists today. We still operate under an 821, although all of these outside procurements that

I discussed are done under the FAR. We are in complete conformity with the FAR in terms of what subcontracts we run. So I hope that answers the question about why we are different.

Mr. WELDON. Thank you. It is important, because we have had other members ask that same question.

Mr. MORROW. Sure.

Mr. WELDON. Dr. Kaminski, during the break, the staff handed you a memo that was delivered by Deputy Secretary of Defense Atwood back in 1991 regarding the management of FFRDC's, and it included size reduction and review of work regarding contracting out and the DOD management of FFRDC's and placed that squarely within DDR&E. And I guess my point is: what has changed since that memo? I mean, you have asked us, I guess, for an advisory committee that you are putting into place. Did that not work, what was suggested by Atwood back then? Were we not successful? What is different? And can you update for us the status as it relates to that memo, which I assume you had a chance to read during the break?

Mr. KAMINSKI. Yes, Mr. Chairman, I have had a chance to read it. As best I can determine, everything that Don Atwood asked be implemented in this letter has been implemented, that is, the DDR&E has conducted periodic reviews. In this case, the reviews have been subordinated to the sponsor. The second paragraph talked about a 12 percent funding cut over a 3-year period. If you go back to the chart I had shown earlier, you can see that. That is where the slope of the line changed in 1991. Perhaps we can put that chart back up.

There was the request that the secretaries of the military departments and the heads of other DOD components review work performed, and finally, the fourth paragraph talked about DDR&E participating in the DOD FFRDC sponsors' comprehensive review. So all of these things that were done.

What I was referring to, if you look at 1991, there was a 12-percent cut in the FFRDC's over a 3-year period, and if you look at those figures, in fact, it is probably a little more than 12 percent. There was probably some congressional reduction taken on top of what the Department imposed.

My response to the letter is that both from the realities and also from the perceptions of the Congress, these steps were not enough, so we put in position stronger steps. This letter, for example, did not address the issue of expanding outside of core lines of work, especially expansion by a parent organization in other noncore activities. And as I indicated earlier, we found that to be a problem in our review, so we put in place a process to do that.

We have implemented one other step over and above this, and that is the independent review committee. I put the independent review committee in place because my sense in these matters is that it is easy for the Department to slip. That is, we developed a management plan or approach; we put it in place; it works just fine for a year. After 2 years, it starts to slip a little bit. After 3 years, people begin to forget about the plan. I wanted some means to go back and periodically review that to be sure that we were doing what we said we were going to do. And it is very often helpful to have an independent committee do that kind of work.

Here, I am trying to create a balance, because the points made by Dr. Smith are very true: there is some additional bureaucracy; there are additional costs associated with the oversight mechanism. My opinion was that the Congress was sending a very strong message that said we did not have enough oversight in place, and my opinion also was that the Department was not responding to that in a sufficient way. And I care very much about these institutions; I did not want to see them lose their critical mass or be undermined, and so I thought we had to respond in a more visible way, which is what we have done.

Mr. WELDON. Thank you, Dr. Kaminski.

With that, we will move on to members. One of our champions for FFRDC's, who got me out to California earlier this year, Ms. Harman?

Ms. HARMAN. Thank you, Mr. Chairman. I want to thank you again for your trip to the aerospace center of the universe—

[Laughter.]

Ms. HARMAN [continuing]. And specifically for your visit to the Aerospace Corporation, although my constituent Pete Aldridge happened to be absent that day.

Mr. WELDON. We marked him absent, did we not? [Laughter.]

Ms. HARMAN. We marked him absent, but we mark him present today, and I appreciated his testimony and yours, Dr. Kaminski.

Let me make a couple of points. I think that what is most important here is not what box something is in or what its acronym is but what is going on here and what matters. And I think we should keep our eye on three things. One is accomplishing critical work. And I have been impressed with the testimony of the gentlemen here about the critical work that they do. I think the second thing we should keep our eye on is leveraging scarce resources. There is not enough money to pay for everything we would like to do, and therefore, it is very important that as DOD operates and as these adjuncts to DOD operate that they leverage scarce resources well. And third, a point that I know Dr. Kaminski makes and I know that the industry in my district makes is that we need to maximize the opportunities for the private sector. If the private sector can do the work, there is no reason why we should use scarce public resources to pay for somebody else to do it. And I have a feeling that that underlies Dr. Kaminski's new policy on core function, which I think is very welcome, long overdue, and will make a big difference.

Pete Aldridge made the point that a lot of what has gone on in the past has occurred because DOD management might not have been all that it needed to be, so Congress got in the act and micro-managed in some ways that have turned out not to be productive. I would like to say this: DOD management is improving. It is wonderful, Dr. Kaminski, that you have made this whole issue one of your personal priorities. But we also need DOD leadership, and it would be a shame if this were the first and last conversation about how all of this is going to change for the future, because I think that your office particularly needs not just to manage but to lead in this area and to make sure that critical work is accomplished, scarce resources are leveraged, and private-sector opportunities are maximized and to get over building a bureaucracy to just focus on

core functions and how to do the work in the simplest and most effective way.

So I would urge you to lead and not just to lead in this area but to lead in a related area, which is dual-use technologies, and that is something else that I know this subcommittee will focus on, and I have talked to the chairman about this, and I know it is a priority of his too. So that is the end of my speech.

Now, my question is really to anyone but, I guess, focused on my constituent Mr. Aldridge. Will you be able to perform critical work that the private sector cannot perform under this core function concept?

Mr. ALDRIDGE. The answer to the question is yes. We support Dr. Kaminski's plan. He has a plan in place which focuses on the core functions of the Aerospace Corporation. I will say we have been focusing on core functions for several years. We have not been outside of our box, and we have stayed fairly close to our knitting certainly for the last 4 years.

The answer is yes so long as the question of the arbitrariness of this ceiling can be removed and let the programs go up or down according to the demands that are placed by the programs that are then approved by the Congress for implementation, and the program managers are given the resources and the responsibility and authority to carry out their program. It is the arbitrariness of the ceiling that has been the difficulty. If the space program was going down, we would say fine; the Aerospace Corporation in support of that space program should decline because the business is not there. The case has been, however, just the opposite. The space program is one of the few areas of the Department of Defense which has been on the rise and has had at least some degree of stability involved, and the workload has been increasing.

The program managers who have responsibility for these programs come to the Congress through the Air Force, through the Department of Defense, through the Office of Management and Budget, and with a budget submittal from the President to the Congress. The Congress then appropriates the funds for those individual programs with the characteristics and conditions under which those programs are to be conducted: a schedule, a performance capability, and so forth. Then, the Congress sends those monies back to the program manager for implementation. Part of that budget request includes the support for the Aerospace Corporation, and the summation of all of those programs is the budget which comes to Aerospace to carry out what the Congress just authorized and appropriated funds to do.

Then, on the other side was an arbitrary ceiling for Aerospace that was below what Congress just appropriated, and so, therefore, there is a demand authorized and appropriated by Congress to meet a certain set of conditions, and now, you are denying to the program manager the capability to carry out the program which just has been approved. That is not an appropriate way to manage a program and to carry out what you have just directed the program manager to fund. This plan, if it is in fact put in place, would remove the arbitrariness of the ceiling and allow the program manager and the Department of Defense and its leadership to carry out a program that is in fact consistent with what a congressional ap-

proval process has just put in place and allows us to go up or down according to what has been demanded for the program, what is in the President's budget, and what Congress has approved of that President's budget. So we believe this plan will in fact work if it is approved according to the way Dr. Kaminski has presented it.

Ms. HARMAN. Well, I obviously agree with you and think it is a big improvement over the prior system, but I would urge DOD, should this all continue, to operate in a nonbureaucratic and highly flexible way so that the promise of the core function concept can be realized.

Finally, let me just raise one other point, and that is that I did not hear any conversation—and I was out a bit, so I might have missed it—about acquisition reform and the effect of acquisition reform, which we have gone a long way toward adopting, on the functioning of FFRDC's and their university counterparts. Would anyone like to address that?

Mr. ALDRIDGE. I could address it from the point of the Aerospace Corporation and the space program. I am going to assert that I believe that the DOD space program—the whole of the national security space program—is the leader in acquisition reform in the Department of Defense. I see it every day. I can go program-by-program of what has been undertaken both from the MILSTAR, which has been adapting acquisition reform to an ongoing program to the new programs which are coming on board: the space-based infrared system; the evolved expendable launch vehicle; the GPS block 2F, all of which have acquisition reform designed in them of which aerospace has been, I believe, one of the champions to pursue that. We have older programs such as the Atlas and the Delta launch vehicle which are produced on commercial production lines. That has been going on for many, many years.

One of the things in acquisition reform that we are trying to do is to take more commercial practices. I believe that Aerospace is the conduit between the commercial sector and the Air Force to provide those commercial practices to the Air Force and to be able to bring back to industry the demands which the Air Force and the national security space program have on the commercial sector to provide certain kinds of components and practices. The other is to ensure that certain functions that can be transferred from the Government-type activities can go back to the contractor for performance, and one of the ways we look at is processes and procedures by which the contractor can take on that responsibility and yet still deliver a quality product with less oversight by the Government. We are also involved in that as well as looking at individual electronic components that can be applied to space programs that are acceptable. Because of the unique environment of space and space radiation, this is certainly a necessary part of commercial practices as well as acquisition reform.

Ms. HARMAN. I thank you.

Does anyone else have a comment on that? And I am done, Mr. Chairman.

Mr. MORROW. Let me make one brief comment about that. Sometimes, this term special strategic relationship that we describe between the Department of Defense and the FFRDC's and UARC's seems to be sort of an unnatural thing, something that does not

happen in the commercial sector. Actually, quite the contrary. If you look at the large and successful commercial companies, as time has gone on; they have moved more and more into strategic relationships with key suppliers and long-term business service associations. And I would say it is very interesting if you look at the people seated at this table today, while the overall ceilings have gone down, the very mission areas that they have been working in: software, space, surveillance systems, our work in knitting together command and control such as CEC that has been done at APL, a whole system of systems architectures, these areas were not picked lightly by the Department. These are all critical growth areas. You can see that our future lies in these areas, and then, many times, what we are doing is drawing in commercial technology that has been developed in these areas for these applications.

So the FFRDC's and UARC's were picked just for that very reason, to be at the knob of where we are heading in the future. And I think you can see that the arbitrary pressures placed on the ceilings here are really causing some limitation in our ability to proceed.

Ms. HARMAN. Thank you.

Mr. WELDON. Thank you, Ms. Harman.

Mr. Taylor, no questions?

Mr. TAYLOR. No questions.

Mr. WELDON. Thank you.

Mr. McHale.

Mr. MCHALE. Thank you, Mr. Chairman. Mr. Chairman, I have just a couple of questions.

In preparation for today's hearing, we received a copy of a CRS report dated March 4 written by Michael E. Davey entitled DOD's Federally Funded Research and Development Centers [FFRDC's]. I think the central purpose of today's hearing is well captured on page 4 of that report, which simply says: "With the end of the cold war and declining DOD R&D budgets, observers in the private and public sectors are concerned that FFRDC's might have diversified into areas beyond their originally defined missions. Individuals inside and outside of Congress assert that this has already happened. Further, some members of Congress have expressed concerns about inadequate oversight of many FFRDC's." And then, on the next page, it says in reference to Dr. Kaminski's report: "On February 5, 1996, Paul Kaminski, Undersecretary of Defense for Acquisition and Technology, released a plan that he indicated was the Department's response for a 5-year plan to address the future of DOD's FFRDC's and UARC's. The plan endorses the continued need for FFRDC's which 'provide essential laboratory R&D system engineering and analytic needs that cannot be met as effectively by other means.'" I think that summarizes pretty well what brings us here today.

Dr. Kaminski, I apologize; I was not present for your earlier testimony. I have looked through your testimony, but I do not have a copy of your plan. How does your testimony today compare to your plan? Is your plan more voluminous, more detailed? In order to get a thorough understanding of the issue, would it be worthwhile to review more than your testimony? Would a reading of your plan be appropriate?

Mr. KAMINSKI. Yes, sir, the plan is in considerably more detail, and the key features of that plan that deal with the issues reported in the CRS first deal with the definition of core work, sort of a stick-to-your-knitting concept of keeping work in the core and the strategic areas. And then, second, there were not adequate procedures in place dealing with diversification from those core lines of business in some cases by the parent, so we established a process to put very much tighter controls on that activity. And as I indicated in my testimony earlier, those procedures in fact caused one of the federally funded research and development centers to split its business lines, one which remained in FFRDC channels, which was the Mitre Corp., and then the other to be able to work in areas outside of the FFRDC business, in essence, diversifying into other lines of business. But those two entities are completely separate: no financial connections; no boards in common; now split into two companies.

Mitre really had a choice. They could have not diversified into the other business areas and remained an FFRDC. I suppose they had three choices. A second choice would have been to get out of the FFRDC business and simply operate in a competitive manner, and the third choice was to split into two companies. So I think there is some evidence to the fact here that there are teeth in the approach that is put in place to put reasonable controls here. On the other hand, what I do not want to do is overburden this whole process with bureaucracy and unnecessary oversight, and the issue here is keeping the correct balance in place.

Mr. MCHALE. Doctor, I do a lot of late-night reading and have a dismal social life. [Laughter.]

Could you send me a copy of your plan?

Mr. KAMINSKI. Yes, sir, I will.

Mr. MCHALE. I would like to take a look at the original.

As I understand your testimony, your plan does thoroughly cover issues of core functions and improved oversight. Does your plan address in any way specifically or impliedly the issue of possible consolidation of some of the sites? That issue has cropped up repeatedly throughout the testimony and also throughout the report. Did you examine that, and did you address that in your report?

Mr. KAMINSKI. We have examined the value of consolidating the FFRDC's. The plan does not deal specifically with provisions for doing that, but our sense was that if you look at the list of FFRDC's, the place where you see the greatest number is in the studies and analysis-related activity. As we looked at that, many of those entities are very small. I think if you add up the total cost of all of the studies and analysis work, it is something less than 20 percent of the total. It is totalled. Maybe we could put that chart back up. I think it was 18 percent; I am not sure that was the number.

Each of those studies and analysis organizations, though, has an association with a particular entity. Let me name one, for example: the Center for Naval Analysis. That is the only analytical arm of the U.S. Navy. The Navy does not have an internal capability; they rely on the Center for Naval Analyses to provide objective external analysis of their major program and related issues. And I would see no benefit, for example, of consolidating the Center for Naval

Analysis with one of the elements of RAND or one of the elements of the Institute for Defense Analyses.

So the benefits to be gained from this consolidation I think are very small in terms of financial savings, and what is lost is that long-term relationship with a sponsor, for example, CNA understanding the various studies that have been done through the years for the Navy and why things that might have been tried in the past would not work. Those special associations, I think, are more valuable to preserve than would be the savings, which would be very small, from consolidation.

Mr. MCHALE. Doctor, I apologize for my ignorance. Where is the Center for Naval Analyses?

Mr. KAMINSKI. It is located in either Arlington or Alexandria—King Street here in Washington.

Mr. MCHALE. All right, I thank you very much. Mr. Chairman, I thank you as well. And Doctor, I would ask that you send me that plan, and I say with some regret I will actually read it. [Laughter.]

Thank you.

Mr. WELDON. Thank you, Mr. McHale, and I have no doubt that you would read it. You are a very astute and dedicated member of this committee and this Congress.

And I just might add that the 5-year plan that was required by the DOD bill which was just enacted into law this year also requires a plan which ties in with what you are doing, and it also mentions specifically any possible attempts at consolidation or combining the operations of the FFRDC's and the UARC's. So we appreciate that acknowledgement in the plan that you will submit to us. I think the bill actually asks something to be submitted to us within 30 or 60 days after the passage. Do you anticipate having something ready for us?

Mr. KAMINSKI. We anticipate meeting that schedule, Mr. Chairman.

Mr. WELDON. Thank you, Dr. Kaminski.

Mr. Kennedy.

Mr. KENNEDY. Thank you, Mr. Chairman.

Very briefly, I would just like Dr. Kaminski to educate me more as to how these FFRDC's work in line with the labs, for instance, the one you just mentioned, the Center for Naval Analyses, how does that work with the Naval Undersea Warfare Lab in Newport, RI?

Mr. KAMINSKI. There is not any direct connection between the two. The Center for Naval Analyses has the responsibility to do arm's-length, independent analysis for the Navy. So one of the things they might be reviewing is a particular program or an opportunity that is being developed at a laboratory. They would be making judgments on is the promise of the technology sufficient to warrant missionization of it? Or how would that mission trade with other missions? So they are really separate functions that in a sense are complementary.

Mr. KENNEDY. One of the things that is working well back in Rhode Island is the partnership between the Naval Undersea Warfare Center [NUWC] and the University of Rhode Island's School of Oceanography, and that has a partnership with the private sector, where there are firms that see an application for the tech-

nology being developed at NUWC and URI in the commercial sector. I think that falls in line with what NASA and Administrator Golden are trying to do in incentivizing the private sector to drive some of this research, and that is, hence, why we are here: to decide what is the proper balance between holding out some incentives for the private sector to help us carry the ball on some of this R&D. Can you describe how this policy that you are undertaking goes in line with this reinventing government that the Vice President has talked about, the application of when we are looking at a high-technology area for private sector investment to be partners in this?

Mr. KAMINSKI. Yes, really, my hope and expectation for this plan is that even though this plan adds additional oversight, what we have tried to do very carefully in this plan is to cause this oversight not to be a burden, and especially in the sense, Mr. Kennedy, that you described where we want it not to be a burden is we do not want it to interfere with the prospects for some transfer and application of commercial technology. Let me give you an example with respect to the MIT Lincoln Lab's relationship. It can draw on the entire resources of the Massachusetts Institute of Technology. It can draw on professors, graduate students, facilities, and some of those may be very broadly based. They may be pursuing commercial-related research in fields or in technologies, for example, in advanced processor technology that is very applicable to what is being done in the DOD. And what we would like to leave open is a path for that technology to flow through the system to be recognized and to be applied and to be sure we do not put any barriers in that relationship.

Mr. KENNEDY. To further explain that, would you explain how the analysis is separate and distinct from the mission of a NUWC? Their role is to do actual programs, and the FFRDC's work is to do analysis on the programs that a NUWC or a superlab would be conducting. Can you help me explain the relationship?

Mr. KAMINSKI. Yes, at least there are three different classes of FFRDC's. There is one class that does system engineering and integration, for example, putting into practice what might be developed at a NUWC, integrating it into a full weapons system. There is a class of FFRDC's which do fundamental R&D work, and the Lincoln Laboratory is one example. I do not believe Lincoln has such a relationship, but they would be the type of organization that would support an organization like NUWC. For example, they support ARPA in some of its endeavors. And then, there is a third class of FFRDC which does arm's-length analysis work. It is not involved in the development or the execution of any particular program, because that involvement would, in fact, cause some conflicts which might question the objectivity of the analysis. So they are constrained simply to operate in an analytical mode with no responsibility for advocacy of a particular program or technology.

Mr. KENNEDY. I see. Thank you very much.

Thank you, Mr. Chairman.

Mr. WELDON. Thank you, Mr. Kennedy.

We have heard again about passthrough contracts, people using FFRDC's sometimes to avoid the competitive contracting process. Does the professional staff limitation imposed by the Congress help

eliminate that or not affect that at all or what impact does that have?

Mr. KAMINSKI. Would you ask the last piece of that again, Mr. Chairman?

Mr. WELDON. The passthrough, contracts, people using FFRDC's to avoid the lengthy competitive contracting process. Do the limitations that Congress has imposed in the past help eliminate that process or not have any impact at all, or are you taking steps to deal with that on your own and do not need the oversight of Congress in that regard?

Mr. KAMINSKI. I do not think the limitations imposed by Congress have had a direct impact on that. They have had an indirect impact in that if the ceiling is smaller, there is a little bit more constraint on the ability to do that. There are two things that we have put into place to limit that issue. One is the sticking to your knitting in the core work and the prevention from diversification. Two, that is the role of this independent advisory committee, because in a sense, there is a little bit of a conflict in the Department of Defense on this issue. When a contract is in place, and an urgent task comes up, it may not be core work, but there is a contract vehicle in place, and if it is something we want quickly, it is very easy to slide into well, we will just put it on the contract. And that is one of the reasons, Mr. Chairman, that I thought it would be very useful for us to have an independent advisory committee who was not subject to that internal conflict.

Mr. WELDON. Thank you. I have some other questions which we will submit for the record, but let me thank you all for coming in. This is an issue that we are going to continue to deal with. Hopefully, with the confidence that has been displayed today, we can move on and work with the administration in the area of FFRDC's and the UARC's that we have in this country.

I would announce for the record that we are also going to accept statements from the GAO and from the service acquisition executives on this issue, and we are also always inviting comments from the private sector in terms of their feelings as you are, Dr. Kaminski, in regard to our operation of FFRDC's and UARC's.

[The prepared statement of Mr. Cooper follows:]

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on Military Research and
Development
Committee on National Security
House of Representatives

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FEDERALLY FUNDED
R&D CENTERS

Observations on DOD Actions
To Improve Management

Statement for the Record by David E. Cooper,
Associate Director, Defense Acquisitions Issues,
National Security and International Affairs Division



Mr. Chairman and Members of the Committee:

I am pleased to be able to provide this statement for the record on the results of our work on the Department of Defense's (DOD) federally funded research and development centers (FFRDC). In recent years, we, as well as the DOD Inspector General, Defense Contract Audit Agency (DCAA), Congressional Research Service, and Defense Science Board (DSB), have reported on issues related to DOD's management and use of its FFRDCs. Appendix I lists these reports.

To address the issues discussed in these reports, DOD established an internal advisory group to review and make recommendations for improving DOD's management of its FFRDCs. Its work resulted in an action plan, which was provided to the Congress in May 1995. In February 1996, DOD provided an update on the status of its action plan. My statement focuses on four key issues presented in the plan and discussed in the status update. These issues are (1) developing guidelines to ensure that management fees provided to FFRDCs are based on need and detailed justification, (2) defining core work appropriate for FFRDCs, (3) establishing criteria for the acceptance of work outside the core by the FFRDCs' parent corporations, and (4) establishing an independent advisory committee to review DOD's management, use, and oversight of its FFRDCs.

We generally support the direction provided in the action plan and believe it addresses some of the long-standing issues that have faced DOD and its FFRDCs. We also support the potential value of establishing strategic relationships between DOD and its contractors, a key factor that DOD attaches to its association with FFRDCs. The only concern on our part is that some of the proposed actions are still in draft form or early implementation, and we have yet to see how well they will address long-standing concerns and how effectively they will be implemented.

BACKGROUND

FFRDCs were first established during World War II to meet specialized or unique research and development needs that could not be readily satisfied by government personnel or private contractors. Additional and expanded requirements for specialized services led to increases not only in the size of the FFRDCs but also the number of FFRDCs, which peaked at 74 in 1969. Today, 8 agencies, including DOD, fund 39 FFRDCs that are operated by universities, nonprofit organizations, or private firms under long-term contracts. Federal policy allows agencies to award these contracts noncompetitively. The Office of Federal Procurement Policy within the Office of Management and Budget (OMB) establishes governmentwide policy on the use and management of FFRDCs.

Within DOD, the Director of Defense Research and Engineering is responsible for developing overall policy for DOD's 11 FFRDCs. The Director communicates DOD policy and detailed implementing guidance to FFRDC sponsors through a periodically updated management plan, and determines the funding level for each FFRDC based on the overall congressional ceiling on FFRDC funding and FFRDC requirements. Total funding for DOD's FFRDCs was \$1.25 billion in fiscal year 1995. DOD categorizes each of its FFRDCs as a systems engineering and integration center, a studies and analyses center, or a research and development laboratory. Appendix II provides information on each FFRDC, including its parent organization, primary sponsor, DOD funding, and staffing levels for fiscal year 1995.

The military services and defense agencies sponsor individual FFRDCs and award and administer the 5-year contracts, typically negotiated noncompetitively, after reviewing the continued need for the FFRDC. Unlike a private contractor, an FFRDC accepts restrictions on its ability to manufacture products and compete for other government or commercial business. These restrictions are intended to (1) limit the potential for conflicts of interest when FFRDC staff have access to sensitive government or contractor data and (2) allow the center to form a special or strategic relationship with its DOD sponsor.

DEVELOPING GUIDELINES ON MANAGEMENT FEES

Management fees are discretionary funds provided to FFRDCs in addition to reimbursement for incurred costs, and these fees are similar to profits private contractors earn. Two issues that have remained unresolved for many years are what should management fee be provided for and how should FFRDCs use this fee. As far back as 1969, we concluded that nonprofit organizations such as FFRDCs incur some necessary costs that may not be reimbursed under the procurement regulations, and we recommended that the Bureau of the Budget (now known as OMB), develop guidance that specified the costs contracting officers should provide fees to cover.¹ In 1993, the Office of Federal Procurement Policy agreed that governmentwide guidance on management fees for nonprofit organizations was needed, but it has not yet issued detailed guidance.

In the absence of such governmentwide guidance, recurring questions continue to be raised about how FFRDCs use their fees. In its 1994 report, for example, the DOD Inspector General concluded that FFRDCs used \$43 million of the \$46.9 million in fiscal year 1992 DOD fees for items that should not have been funded from fees. The bulk of this \$43 million funded independent research projects that should have been charged to overhead, according to the report. The remainder funded otherwise unallowable costs and future requirements, which the report concluded were not necessary for FFRDC

¹Need for Improved Guidelines In Contracting for Research With Government-Sponsored Nonprofit Contractors (B-146810, Feb. 1969).

operations. Similarly, as we recently reported, DCAA reviewed fiscal year 1993 fee expenditures at the MITRE Corporation and concluded that just 11 percent of the expenditures reviewed were ordinary and necessary to the operation of the FFRDC. DCAA reported that MITRE used fees to pay for items such as lavish entertainment, personal expenses for company officers, and generous employee benefits.² In our recent work at The Aerospace Corporation, we found that the corporation used about \$11.5 million of its \$15.5 million management fee for sponsored research.³ Aerospace used the remainder of its fee and other corporate resources for capital equipment purchases; real and leasehold property improvements; and other unreimbursed expenditures, such as contributions, personal use of company cars, conference meals, trustee expenses, and new business development expenses.

DOD's action plan recommended implementation of revised guidelines for management fee. Specifically, it recommended (1) moving allowable costs out of fee and reducing fee accordingly, and (2) establishing consistent policies on ordinary and necessary costs to be funded through fee. If effectively implemented, these actions should help to resolve many of the long-standing concerns over FFRDC use of management fee. Moving FFRDC-sponsored research out of fee would result in a substantial reduction of fee amount and should provide for more effective DOD oversight of FFRDC expenditures. This action would also subject all research to the Federal Acquisition Regulation cost principles applicable to cost-reimbursable items.

Defining ordinary and necessary expenses which may be covered by fee is a more challenging issue, which may explain why the issue has gone unresolved for so long. However, until DOD issues specific guidance regarding ordinary and necessary expenses, debate will likely continue on whether fee can be used for such things as personal expenses for company officers, entertainment, and new business development. Although DOD's action plan identifies the need for clarifying guidance, our understanding is that such guidance has not been issued.

DEFINING CORE WORK

As a robust private-sector professional services industry grew to meet the demand for technical services, it became apparent that industry had the capability to perform some tasks assigned to FFRDCs. As early as 1962, the Bell Report noted criticism that nonprofit systems engineering contractors had undertaken work traditionally done by

²Federally Funded R&D Centers: Use of Fee by the MITRE Corporation (GAO/NSIAD-96-26, Nov. 27, 1995).

³Federally Funded R&D Centers: Use of Contract Fee by The Aerospace Corporation (GAO/NSIAD-95-174, Sept. 28, 1995).

private firms.⁴ A 1971 DOD report stated, "It is pointless to say that the [systems engineering FFRDCs'] function could not be provided by another instrumentality...."⁵ According to this report, private contractors could also do the same type of work as the studies and analyses FFRDCs. The report pointed to the flexibility of using the centers and their broad experience with sponsors' problems as reasons for continuing their use. More recently, the DOD Inspector General concluded that FFRDC mission statements did not identify unique capabilities or expertise, resulting in FFRDCs being assigned work without adequate justification.⁶

In a 1988 report, we pointed out that governmentwide policy did not require that FFRDCs be limited to work that industry could not do; FFRDCs could also undertake tasks they could perform more effectively than industry.⁷ FFRDCs are effective, we observed, partly because of their special relationship with their sponsoring agency. This special relationship embodies elements of access and privilege as well as constraints to limit their activities to those DOD deems appropriate.

In 1995, the DSB and DOD's Action Plan elaborated on and refined the concept of the FFRDC special relationship. According to DOD, FFRDCs perform tasks that require a special or strategic relationship to exist between the task sponsor and the organization performing the task. Table 1 shows DOD's description of the characteristics of this special relationship.

⁴Report to the President on Government Contracting for Research and Development, U.S. Senate, 87th Congress, 2nd Session, Document No. 94, May 17, 1962. This report, prepared by a presidentially appointed committee led by Bureau of the Budget Director David Bell, is commonly referred to as the "Bell Report."

⁵Report of the Special Study Group on Federal Contract Research Centers, Director of Defense Research and Engineering, Office of the Secretary of Defense, August 30, 1971.

⁶Contracting Practices for the Use and Operations of DOD-Sponsored Federally Funded Research and Development Centers, Office of the Inspector General, Department of Defense (95-048, Dec. 2, 1994).

⁷Competition: Issues on Establishing and Using Federally Funded Research and Development Centers (GAO/NSIAD-88-22, Mar. 7, 1988).

Table 1: Characteristics of the Relationship Between an FFRDC and Its DOD Sponsor

Characteristic	Description
Long-term continuity.	Uninterrupted, consistent support based on a continuing relationship.
Comprehensive knowledge of sponsor needs and operations.	Expertise on and institutional memory about issues of enduring concern to the sponsor.
Adaptability.	Ability to respond to emerging needs of their sponsors.
Objective, high-quality, current research.	A highly educated and skilled professional staff that can produce thorough, independent analyses to address complex technical and analytical problems and maintain currency in their fields of expertise.
Freedom from real or perceived conflicts of interest.	Independence from commercial, shareholder, political, and other associations and dedication to the public interest.
Broad access to sensitive government and commercial proprietary information.	Lack of institutional interests that could lead to misuse of information or cause contractor reluctance to provide such information.
Quick response capability.	Short-term assistance to help sponsors meet urgent and high-priority requirements.

According to the DSB, this special relationship allows an FFRDC to perform research, development, and analytical tasks that are integral to the mission and operation of the DOD sponsor.

The DSB and an internal DOD advisory group concluded that there is a continuing need for certain core work that requires the special relationship previously described.⁸ DOD concluded that giving such tasks to private contractors would raise numerous concerns, including questions about potential conflicts of interest. Accordingly, DOD has defined an FFRDC's core work as tasks that (1) are consistent with the FFRDC's purpose, mission, capabilities,

⁸Report of the DOD Internal Advisory Group on Federally Funded Research and Development Centers (May 18, 1995).

and core competencies and (2) require the FFRDC's special relationship with its sponsor. The DOD advisory group estimated that this core work represented about 6 percent of DOD's research, development, and analytic effort. The DSB and the DOD advisory group also concluded that FFRDCs performed some noncore work that did not require a special relationship, and they concluded that this work should be transitioned out of the FFRDCs and acquired competitively. On the basis of these conclusions, DOD directed each sponsor to review its FFRDC's core competencies, identify and prioritize the FFRDC's core work, and identify the noncore work that should be transitioned out of the FFRDC.

The core competencies the DOD sponsors identified appear to differ little from the scope of work descriptions that were in place previously. In several cases, sponsors seem to have simply restated the functions listed in an FFRDC's scope of work description. In other cases, the core competencies summarized the scope of work functions into more generic categories.

In February 1996, the Under Secretary for Defense (Acquisition and Technology) reported that DOD sponsors had identified \$43 million, or about 4 percent of FFRDC funding, in noncore work being performed at the FFRDCs. According to the Under Secretary, ongoing noncore work is currently being transferred out of the FFRDCs.

Even though DOD states that it is important to ensure that tasks assigned to the FFRDC meet the core work criteria, we believe it will continue to be difficult to determine whether a task meets these criteria. FFRDC mission statements remain broad, and core competencies appear to differ little from the previous scope of work descriptions. As we stated in our 1988 report, the special relationship is the key to determining whether work is appropriate for an FFRDC. However, determining whether one or more of the characteristics of the special relationship is required for a task may be difficult, since the need for an element of the special relationship is normally relative rather than absolute. For example, we believe DOD would expect objectivity in any research effort, but it may be difficult to demonstrate that a particular task requires the special degree of objectivity an FFRDC is believed to provide.

Uncertainty about whether an FFRDC's special relationship allows it to perform a task more effectively than other organizations also accompanies decisions to assign work to an FFRDC. In our 1988 report, we stated that full and open competition between all relevant organizations (FFRDCs and non-FFRDCs) could provide DOD assurance that it has selected the most effective source for the work. However, exposing FFRDCs to marketplace competition would fundamentally alter the character of the special relationship.

While DOD has initiated a department-wide effort to define more clearly the work its FFRDCs will perform, the criteria DOD has developed remains somewhat general. Applying this criteria requires the making of judgements about the relative effectiveness of various sources for work in the absence of full information on capabilities which open competition would provide. It is doubtful that DOD's criteria will be satisfactory to those critics who are seeking a simple and unambiguous definition of work appropriate for FFRDCs.

ACCEPTING NON-FFRDC WORK

The question of whether accepting work from organizations other than its sponsor impairs an FFRDC's ability to provide objective advice has long been discussed. As early as 1962, the Bell Report raised this question but noted that no clear consensus had developed as to whether concerns about diversification were well founded. The report recognized that studies and analyses FFRDCs could effectively serve multiple clients but concluded that systems engineering organizations were primarily of value when they served a single client. During the early 1970s, DOD encouraged its FFRDCs to diversify into nonsponsor work. According to a 1976 DOD report, FFRDCs that did not diversify suffered efficiency and morale problems as their organizations shrank in the face of declining DOD research and development budgets.⁹ Nonetheless, this report recommended that the systems engineering FFRDCs limit themselves to DOD work and adjust their work forces in line with changes in the DOD budget. Regarding the MITRE Corporation, the report recommended that MITRE create a separate affiliate organization to carry out its nondOD work. In 1994, Congress raised the issue that non-FFRDC affiliate organizations resulted in "...an ambiguous legal, regulatory, organizational, and financial situation," and directed that DOD prepare a report on non-FFRDC activities.¹⁰ More recently, however, the DSB concluded that FFRDCs and their parent companies should be allowed to accept work outside the core domain only when doing so was in the best interests of the country; the DSB did not propose criteria for determining when accepting nonsponsor work was in the country's best interests.

Acceptance of nonsponsor work is now common at DOD's FFRDCs. Except for the Institute for Defense Analyses, each parent organization performs some non-DOD work either within the FFRDC or through an affiliate organization created to pursue non-FFRDC work. Currently, six of the eight parent organizations that operate FFRDCs also operate one or more non-FFRDC affiliates. Some of these affiliates are quite small: the Center for Naval Analyses Corporation's Institute for Public Research accounts for about 3 percent of the center's total effort. Other affiliates are more significant: the MITRE Corporation's two non-FFRDC affiliates accounted for about 11 percent of MITRE's total effort, and the RAND Corporation's 5 non-FFRDC divisions account for about 32 percent of its total effort. The Massachusetts Institute of Technology and Carnegie-Mellon University--parent organizations of the MIT Lincoln Laboratory and the Software Engineering Institute, respectively--each pursue a diverse range of non-FFRDC activities.

DOD has recently become more active in seeking to oversee work its FFRDCs perform through non-FFRDC divisions. DOD sponsors have historically had the opportunity to oversee nonsponsor work performed within the FFRDC because the work is carried out under the

⁹Management of the DOD Federal Contract Research Centers, Director of Defense Research and Engineering, Office of the Secretary of Defense, June 1976.

¹⁰National Defense Authorization Act for Fiscal Year 1995, Senate Report 103-282.

FFRDC contracts that sponsors administer. This contract oversight mechanism is not available for non-FFRDC divisions. During 1995, for example, the Air Force expressed great reluctance to support The Aerospace Corporation's proposal to establish a non-FFRDC affiliate, indicating that the Air Force was concerned that it could not avoid the perception of a conflict of interest. Similarly, the MITRE Corporation sought permission to create a separate corporate division to perform non-FFRDC work. Recognizing that this arrangement could create a potential for conflicts of interest, DOD required MITRE to spin off a separate corporation to carry out its non-FFRDC activities. DOD required this new corporation to have a separate board of trustees and its own corporate officers. Further, DOD required that no work be subcontracted between the two entities to preclude the sharing of employees involved in DOD work--and knowledge developed in the course of DOD work--with the new corporation.

DOD's recent update of its action plan stated that a new policy requires the use of stringent criteria for the acceptance of work outside the core by the FFRDC's parent corporation. According to DOD, this new policy will ensure focus on FFRDC operations by the parent and eliminate concerns regarding "unfair advantage" in acquiring of such work. Currently, DOD plans to revise its FFRDC management plan, which would provide for greater oversight of non-FFRDC affiliates at all centers. These changes would require FFRDCs to agree to conduct non-FFRDC activities only if the activities are (1) subject to sponsor review and approval, (2) in the national interest, and (3) do not give rise to real or potential conflicts of interest.

ESTABLISHING AN INDEPENDENT ADVISORY COMMITTEE

Even though it endorsed the need for organizations such as FFRDCs, a DSB study recently concluded that the public mistrusted DOD's use and oversight of FFRDCs. A principal concern, according to the study, is that DOD assigns work to FFRDCs that can be performed as effectively by private industry and acquired using competitive procurement procedures. Further, DSB found that the lack of opportunities for public review and comment on DOD's process for managing and assigning work to FFRDCs--available in the competitive contracting process--invites mistrust. To address public skepticism about DOD's use and management of FFRDCs, DSB recommended the creation of an independent advisory committee of highly respected personnel from outside DOD. The committee would review the continuing need for FFRDCs, FFRDC missions, and DOD's management and oversight mechanisms for FFRDCs. DOD's action plan also recommended the establishment of an independent advisory committee to review and advise on FFRDC management.

In late 1995, an independent advisory committee was established. The six committee members, who are either DSB members or consultants, represent both industry and government. The committee is responsible for reviewing and advising DOD on the management of its FFRDCs by

- providing guidelines on the appropriate scope of work, customers, organizational structure, and size of the FFRDCs;
- overseeing compliance with DOD's FFRDC Management Plan;

- reviewing sponsor's management of FFRDCs;
- reviewing the level and appropriateness of non-DOD and nonsponsor work performed by the FFRDCs;
- overseeing the comprehensive review process; and
- performing selected FFRDC program reviews.

In January 1996, the advisory committee began a series of panel discussions at several FFRDCs, which were attended by DOD sponsor personnel and FFRDC officials. Representatives of our office attended the initial fact finding meetings and observed that the panel members appear to approach their task with the utmost seriousness and challenged the conventional wisdom by asking tough questions of both DOD and FFRDC officials. The advisory group plans to produce its first report in March 1996.

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Mr. Chairman, this completes my statement for the record.

RELATED FFRDC PRODUCTS

Defense Research and Development: Fiscal Year 1993 Trustee and Advisor Costs at Federally Funded Centers (GAO/NSIAD-96-27, Dec. 26, 1995).

Federal Research: Information on Fees for Selected Federally Funded Research and Development Centers (GAO/RCED-96-31FS, Dec. 8, 1995).

Federally Funded R&D Centers: Use of Fee by the MITRE Corporation (GAO/NSIAD-96-26, Nov. 27, 1995).

Federally Funded R&D Centers: Use of Contract Fee by The Aerospace Corporation (GAO/NSIAD-95-174, Sept. 28, 1995).

Defense Research and Development: Affiliations of Fiscal Year 1993 Trustees for Federally Funded Centers (GAO/NSIAD-95-135, July 26, 1995).

Department of Defense Federally Funded Research and Development Centers, Office of Technology Assessment (OTA-BP-ISS-157, June 1995).

Compensation to Presidents, Senior Executives, and Technical Staff at Federally Funded Research and Development Centers, DOD Office of the Inspector General (95-182, May 1, 1995).

Comprehensive Review of the Department of Defense's Fee-Granting Process for Federally Funded Research and Development Centers, Director for Defense Research and Engineering, May 1, 1995.

The Role of Federally Funded Research and Development Centers in the Mission of the Department of Defense, Defense Science Board Task Force, April 25, 1995.

Addendum to Final Audit Report on Contracting Practices for the Use and Operations of DOD-Sponsored Federally Funded Research and Development Centers, DOD Office of the Inspector General (95-048A, Apr. 19, 1995).

DOD's Federally Funded Research and Development Centers, Congressional Research Service (95-489 SPR, Apr. 13, 1995).

Report on Department of Defense Federally Funded Research and Development Centers and Affiliated Organizations, Director for Defense Research and Engineering, April 3, 1995.

Federally Funded R&D Centers: Executive Compensation at The Aerospace Corporation, (GAO/NSIAD-95-75, Feb. 7, 1995).

Contracting Practices for the Use and Operations of DOD-Sponsored Federally Funded Research and Development Centers, DOD Office of the Inspector General (95-048, Dec. 2, 1994).

Sole Source Justifications for DOD-Sponsored Federally Funded Research and Development Centers, DOD Office of the Inspector General (94-012, Nov. 4, 1993).

DOD's Federally Funded Research and Development Centers, Congressional Research Service (93-549 SPR, June 3, 1993).

Inadequate Federal Oversight of Federally Funded Research and Development Centers, Subcommittee on Oversight of Government Operations, Senate Governmental Affairs Committee (102-98, July 1992).

DOD's Federally Funded Research and Development Centers, Congressional Research Service (91-378 SPR, Apr. 29, 1991).

Competition: Issues on Establishing and Using Federally Funded Research and Development Centers (GAO/NSIAD-88-22, Mar. 7, 1988).

APPENDIX II

APPENDIX II

INFORMATION ON DOD'S FEDERALLY FUNDED
RESEARCH AND DEVELOPMENT CENTERS

Fiscal year 1995 dollars in millions

FFRDC	Parent organization	Primary sponsor	Obligations	MTS ¹¹
Systems engineering and integration centers				
Aerospace	The Aerospace Corp	Air Force	\$335	1,910
MITRE C ² I	MITRE Corporation	Assistant Secretary of Defense (C ² I)	374	2,109
Subtotal			\$709	4,019
Studies and analyses centers				
Arroyo Center	RAND Corporation	Army	20	99
Project Air Force	RAND Corporation	Air Force	24	112
National Defense Research Institute	RAND Corporation	OSD	19	105
Center for Naval Analyses	The CNA Corporation	Navy	47	238
IDA-Studies and Analyses/ Operational Test and Eval Ctr	IDA	OSD	68	377
Logistics Management Institute	Logistics Management Institute	OSD	29	166
Subtotal			\$207	1,097
Research and development laboratories				
Lincoln Laboratory	Massachusetts Institute of Technology	Air Force	275	1,018
Software Engineering Institute	Carnegie-Mellon University	Advanced Research Projects Agency	29	170
IDA-Communications and Computing	IDA	National Security Agency	33	142
Subtotal			\$337	1,330
Total			\$1,253	6,446

Note: command, control, communication, and intelligence (C²I); Office of the Secretary of Defense (OSD); and Institute for Defense Analyses (IDA).

Source: OSD.

(707160)

¹¹MTS (members of the technical staff) includes the direct professional labor of scientists, engineers, researchers, mathematicians, analysts, economists, and others who perform professional-level technical work. MTS is defined as 1,810 hours of full-time professional effort and does not include subcontracted effort.

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Mr. WELDON. And finally, just let me say in closing that it was a pleasure to have you here. I have the highest confidence in your leadership, Dr. Kaminski. As you know, I started this hearing off on somewhat of a sour note, because I was not happy, and I am still not happy with what transpired last week. This subcommittee, which probably works most closely with you because of our jurisdiction, is planning on holding somewhere around 20 hearings this year—we have already held 5 this year, one in Mr. Kennedy's district and Ms. Harman's district—on topics ranging from FFRDC's to oceanography issues, on issues involving land mines, issues involving dual-use technologies but very extensively in the area of missile defense. I was personally offended by not you, by the administration's refusal to allow witnesses to appear last week, especially when the reason given to me and to members was that was not proper because the Secretary had not yet come before the Congress. As a matter of fact, I mentioned the day before our hearing was scheduled to occur, Vice Admiral Owens was before the Senate Armed Services Committee making a statement about missile defense.

I have talked to both the Speaker of the House and the chairman of the full committee and hope this will not be necessary, because I run this committee in a very bipartisan manner, but if that happens again, I will not fail to use the subpoena power of this committee. We want to work in an intelligent way with the information available to us to make decisions based on fact and not emotion. And what happened last week, I think, was uncalled for and unfortunate, and I would hope that you being a good friend and someone whom we have the highest admiration for would convey that message back to Dr. White.

Thank you. The meeting is now adjourned.

[Whereupon, at 4:33 p.m., the subcommittee was adjourned.]

[The following information was submitted for the record:]

CRS Report for Congress

Congressional Research Service • The Library of Congress

DOD's Federally Funded Research and Development Centers (FFRDCs)

Michael E. Davey
Specialist in Science and Technology
Science Policy Research Division

SUMMARY

Federally Funded Research and Development Centers (FFRDCs) were first established during World War II to meet specific defense research and development (R&D) needs that were not readily available in the Services or the private sector. The United States has witnessed a tremendous growth in private sector firms that offer sophisticated R&D capabilities which often match or exceed government sponsored FFRDCs. In the past several years, congressional and non-congressional critics have expressed increasing concern regarding FFRDCs including, the diversification of some center activities into areas beyond the scope of their original mission, the Department of Defense's (DOD) continuing need for FFRDCs and compensation of senior and executive level personnel.

BACKGROUND

FFRDCs are not-for-profit organizations which are financed on a sole-source basis, exclusively or substantially by an agency of the federal government, but are not subject to Office of Personnel Management regulations. They operate as private corporations, although they are subject to certain personnel and budgetary controls imposed by Congress and/or their sponsoring agency. Each is administered, through a contract with the sponsoring agency, by either an industrial firm, a university, or a nonprofit institution. Thus, Center personnel are not considered federal employees. There are four categories of FFRDCs: research laboratories, R&D laboratories, study and analysis centers, and systems engineering/systems integration centers.

FFRDCs were established by the Department of Defense (DOD) during and immediately following World War II. For various reasons (e.g., lower pay than in the private sector and slow hiring procedures), the Pentagon was not able to attract the scientific and technological talent necessary to meet its broad R&D needs. For example, in 1942, the Navy established the Applied Physics Laboratory (APL), at Johns Hopkins University to work in the area of radio proximity fuzes for fleet antiaircraft defense.



Eight federal agencies currently operate a total of 42 FFRDCs. The Department of Energy (DOE) and the Department of Defense together sponsor 34 FFRDCs, with DOE operating 22 centers and DOD 12. According to the National Science Foundation (NSF), in FY1993 the federal government spent \$67.3 billion on R&D, of which \$5.9 billion or 8.7% was obligated for FFRDCs.¹

ESTABLISHING FFRDCS

According to the Office of Federal Procurement Policy (OFPP), federal agencies should only establish an FFRDC when the agency determines: "Existing alternative sources for satisfying agency requirements cannot effectively meet the sponsor's special research and development needs."²

To establish an FFRDC, an agency must follow the guidelines of the OFPP. According to the National Science Foundation, once the agency implements the OFPP guidelines, the new FFRDC should have the following characteristics: (1) its primary activities include: basic research, applied research, development, or management of research and development; (2) it is a separate operational unit within the parent organization or is organized as a separately incorporated organization; (3) it performs actual R&D or R&D management either upon direct request of the federal government or under a broad charter from the federal government, but in either case under direct monitoring by the federal government; (4) it receives its major financial support (70% or more) from the federal government, usually from one agency [see table 1]; (5) it has, or is expected to have, a long-term relationship with its sponsoring agency (usually 5 years, with a review of the center's progress conducted by the sponsoring agency during the third year of the agreement); (6) most or all of its facilities are owned by, or are funded under contract with, the federal government, (7) it has an average annual budget (operating and capital equipment) of at least \$500,000;³ and, when renewing the sole-source contract, the sponsoring agency is required to determine if it still needs to sponsor an FFRDC or if the work could be done in a federal facility, or through a traditional private sector contract.

DEPARTMENT OF DEFENSE FFRDCS

In the early 1960s, DOD sponsored 39 FFRDCs, but by 1984 that number had shrunk to eight. In FY1996, DOD will sponsor 12 FFRDCs with an estimated total budget of about \$1.162 billion (see table 1). In FY1996, funding for DOD's FFRDCs will represent 3.2% of DOD's research, development, test, and evaluation (RDT&E) budget. DOD's 12 FFRDCs fall into

¹ U.S. National Science Foundation. *Federal Funds for Research and Development: Fiscal Year 1993, 1994, and 1995*, v. 43, NSF 95-334, p. C-9 & C-30. DOE says that it has 26 FFRDCs.

² U.S. General Accounting Office. *Competition: Issues on Establishing and Using Federally Funded Research and Development Centers*. Washington, Mar. 1988. GAO/NSIAD-88-22, p. 11.

³ *Federal Funds for Research and Development*, op. cit., p. 8 & 9

three categories: three R&D laboratories, six Study and Analysis Centers, and three Systems Engineering/Systems Integration Centers. The three R&D laboratories perform a broad range of R&D activities for the Services, certain defense agencies, and some non-DOD clients.

The six DOD study and analysis centers are involved in analytical activities in which little hardware-related laboratory research or development is carried out. These study centers were established to provide the OSD and the different Services with help in solving organizational or operational problems. Systems engineering/systems integration (SE/SI) centers primarily provide systems engineering, R&D systems integration, and management support for definition and development of large technical systems. DOD established these centers because it lacked certain in-house capability in large systems development, integration, and verification. While DOD recognizes that significant SE/SI capabilities currently exist in the private sector, DOD argues it still needs FFRDCs that possess a thorough familiarity with sponsor issues, free from private sector business pressures and conflicts.

CONGRESSIONAL CONCERNs

Over the last several years, congressional concerns regarding FFRDCs have centered around: the availability of accurate budget data; compensation of personnel; DOD's oversight of FFRDC activities; and diversification of some centers into areas beyond their "core" responsibilities. Since FFRDCs do not have separate funding lines, Congress has been utilizing funding ceilings as a way to control their spending. Between FY1991 (when funding for DOD's FFRDCs peaked at \$1.526 billion) and FY1996, Congress has reduced funding for the 12 Centers 33%, in constant dollars, to \$1.162 billion. This reduction has required the FFRDCs to reduce their technical work force 31%, from a 1991 high of 8,549 to an estimated 5,884 in 1996. Some sponsors contend these cuts have impaired their ability to properly utilize their centers.

As part of the FY1995 Defense Appropriations Bill, (H.R. 4650, P.L. 103-355) Congress imposed a pay cap of \$148,500 for all FFRDC employees, effective July 1, 1995. Congress did not extend the pay cap into FY1996. The FY1995 Defense Authorization Bill (P.L. 103-337) requested that the DOD Inspector General (IG) conduct a review of FFRDC's executive compensation packages, as well as the salary level of FFRDC employees. The IG has been requested to examine other compensation issues such as bonuses, moving expenses, severance packages and other benefits. The Authorization Bill also requested the Defense Science Board (DSB) examine the extent to which DOD's FFRDCs help the military fulfill its mission. And, whether DOD still needs to support these unique entities or if the Centers' work could be done by an in-house DOD laboratory, or contracted to the private sector. Both reports are due to Congress by May 1, 1995.

On May 1, 1995, the DOD IG released its review of executive compensation packages as well as salary levels of FFRDC technical employees. Although hampered by in-house FFRDC salary compensation studies that were not always

"suitable for determining the reasonableness of FFRDC compensation," the IG concluded that salaries of FFRDC presidents and senior executives were generally in line with salaries at for-profit private industry companies, but higher than salaries at non-profit organizations (all FFRDCs are non-profit) and in the federal government. The IG also indicated that salaries of technical staff at five FFRDCs were higher than at other R&D organizations, and retirement plan contributions for president and senior executives at MITRE and Aerospace were higher than at other FFRDCs and in the federal government. The IG concluded that the sponsoring agencies for the five FFRDCs, and MITRE and Aerospace should challenge these costs.⁴

In April of 1995, the DSB released its report reaffirming DOD's continuing need for "FFRDC like organizations." The DSB noted that work performed by DOD's FFRDCs is judged to be of high quality. Other DSB findings included the recognition that some FFRDCs had strayed into "non-core" activities that should be competed in the private sector, and that the congressional imposed salary cap, unique to FFRDCs, is inappropriate. Finally, the DSB noted that systems integration (SI) and systems engineering (SE) work performed by Aerospace and MITRE is very similar to work conducted by for-profit companies, but, after considerable debate, decided that this special relationship should be maintained.

With the end of the Cold War and declining DOD R&D budgets, observers in the private and public sectors are concerned that FFRDCs might have diversified into areas beyond their originally defined missions. Individuals inside and outside of Congress assert that this has already happened. Representatives from the Professional Services Council argue that these centers have received a number of contracts from various federal agencies for which private service companies had originally competed. Further, some Members of Congress have expressed concerns about inadequate oversight of many FFRDCs. A 1992 Senate Government Affairs report noted that a number of FFRDCs, including some in DOD, had poor cost controls that made it difficult for the federal government to "refuse reimbursement of excessive expenses, indirect costs, and management fees."⁵

In response to these concerns, Congress included in the FY1996 Defense Authorization bill (P.L. 104-106) a provision requesting that DOD prepare a 5-year plan "to reduce and consolidate the activities performed by FFRDCs and UARCs⁶ and establish a framework for the future workload of such centers."

⁴ Compensation to Presidents, Senior Executives, and Technical Staff at FFRDCs, May 1, 1995, DOD IG Rept 95-182 p.23.

⁵ Inadequate Federal Oversight of Federally Funded Research and Development Centers. Committee on Government Affairs, Subcommittee on Oversight of Government Management. U.S. Senate S. Rept. 102-98, July 1992. p. 2.

⁶ DOD sponsored University Affiliated Research and Development Centers, which operate like FFRDCs, that are non-profit, private sector organizations affiliated with universities. They include the following, with FY1996 funding levels in millions\$: John Hopkins Univ. Applied Physics Lab \$359, Univ. of Washington Applied Physics Lab \$16; Penn State Univ. Applied Research Lab \$65,

The plan, to be implemented by October 1, 2000, should identify the core activities that the FFRDCs and UARCs should perform.

On February 5, 1996, Paul Kaminski, Under Secretary of Defense for Acquisition and Technology, released a plan that he indicated was the Department's response to Congress's call for a 5-year plan to address the future of DOD's FFRDCs and UARCs. The plan endorses the continue need for FFRDCs which "provide essential laboratory R&D, system engineering and analytic needs that cannot be met as effectively by other means." As part of the plan, the Department developed definitions of core work for each of its FFRDCs and UARCs. Based on these definitions, the sponsors were able to identify \$43 million of FFRDC non-core work and, \$26 million of UARC non-core activities. According to LOD, non-core work will be transferred to other performers.

Further, primarily as a result of DOD's new policy requiring FFRDCs to focus on core work, MITRE has decided to divide itself into two companies. MITRE will continue to operate its FFRDCs for DOD and the FAA, while the new company, Mitretek, will split off (with 650 employees and a \$70 million business base) and focus its efforts on existing non-FFRDC work. Both companies will be non-profit, operating independently, with a separate board of trustees, officers, managers, and employees. Eventually Mitretek expects to spin-off at least one for-profit company. According to Secretary Kaminski, MITRE's actions should address private sector concerns regarding FFRDCs migrating into non-core activities. However, DOD is developing stringent criteria which would allow FFRDCs to accept non-core work in the event of an urgent national security need. Finally, to strengthen oversight of its FFRDCs and UARCs, DOD has established and Independent Advisory Committee to review and provide advice on DOD's management of these centers. The Advisory Committee will conduct semi-annual reviews to advise the Department on such concerns as whether the centers are sticking to core activities, complying with DOD managements plans, including the payment and use of management fees, and the level and appropriateness of non-DOD work.

While DOD contends this plan responds to Congress's FY1996 authorization provisions, it does not address the issue of potential reduction and consolidation of FFRDCs and UARCs. Congress also requested that the plan assess the number of personnel needed in each FFRDC and UARC during each year over the 5 years covered in the plan.

Univ. of Texas Applied Research Lab \$43; Utah State Univ. Space Dynamics Lab \$12.5; and the Georgia Tech research Institute \$10.2.

TABLE 1. DOD's FFRDCs^a

Category	Principle Sponsor	Contractor	Date Established	Professional Staff		Funding (\$ millions)
				1991	1996 and	
Study and Analysis Centers						
Institute of Defense Analysis ^b	OSD, Joint Chiefs of Staff (JCS), and Defense Agencies	Institute for Defense Analysis	1986	650	281	\$55.4
Center for Naval Analysis	Navy and Marine Corps	The CNA Corporation	1942	252	234	\$49.2
Logistics Management Institute	Aust. Sec. Def. Manpower, Install., Acquis., Logistics and Def. Agencies	Logistics Management Inst	1984	160	148	\$23.1
Rand Arroyo Center	Army	The Rand Corporation	1984	130	97	\$26.2
Rand National Def. Research Inst	OSD/DICS	The Rand Corporation	1983	165	104	\$25.4
Rand Project Air Force	Air Force	The Rand Corporation	1948	140	113	\$24.8
Systems Engineering and Systems Integration						
Institute for Defense Analysis	OT&E ^c (Off Sec. of Defense)		1986	N/A	67	\$14.6
The Aerospace Corporation	Air Force Space Division	The Aerospace Corporation	1960	2,641	1,765	\$591.0
The MITRE Corporation, C ^d	Air Force/Army	The MITRE Corporation	1968	3,090	1,866	\$426.8
Research and Development Laboratory						
Software Engineering Institute	ARPA ^d	Carnegie Mellon University	1984	160	155	\$37.6
Lincoln Laboratory	Air Force	Massachusetts Institute of Technology	1951	1,311	920	\$422.0
Institute for Defense Analysis	C ^d (Off Sec. of Defense)	Institute for Defense Analysis	1986	N/A	134	\$12.6
Totals				8,629	6,884	\$1,526.7
						\$1,162

^a Table developed by CIDS. Figures provided by DOD.^b In FY1993, OSD divided IDA into three separate FFRDCs to reflect the different missions of the institution.^c Office of Test and Evaluation^d Advanced Research Projects Agency

CHEMICAL-BIOLOGICAL DEFENSE PROGRAM AND RESPONSE TO URBAN TERRORISM

**HOUSE OF REPRESENTATIVES,
COMMITTEE ON NATIONAL SECURITY,
MILITARY RESEARCH AND DEVELOPMENT SUBCOMMITTEE,
Washington, DC, Tuesday, March 12, 1996.**

The subcommittee met, pursuant to call, at 2:10 p.m., in room 2118, Rayburn House Office Building, Hon. Curt Weldon (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. CURT WELDON, A REPRESENTATIVE FROM PENNSYLVANIA, CHAIRMAN, MILITARY RESEARCH AND DEVELOPMENT SUBCOMMITTEE

Mr. WELDON. The subcommittee will now come to order. Let me thank you for coming today. This morning, as you all know, we are technically not in session for votes, so Members are returning back to Washington. I anticipate Members will be joining us as we proceed, but rather than hold you all up, we have distributed copies of your testimony and the backup for this hearing to Members, and as they arrive, we will allow them to join in. But I would rather start to get the hearing moving so that we can get into some of the substance.

Today, the Research and Development Subcommittee of the House National Security Committee meets to gain an understanding of the chemical and biological threats to the U.S. Armed Forces and the general population as well—and I want to reemphasize that: As well as the general population—and to review the preparedness of the United States to respond to the potential threats proposed by the proliferation of chemical and biological weapons on the battlefield and the potential threat posed by the use of chemical or biological agents in domestic terrorism.

Today's hearing is the first formal review of the Department of Defense Chemical and Biological Defense Program by the committee since the enactment of Public Law 103-160, the National Defense Authorization Act for fiscal year 1994, which included a number of measures to strengthen the conduct of the Chemical and Biological Defense Program within DOD. This hearing was proceeded this morning by a subcommittee informal classified briefing on the worldwide proliferation of chemical and biological agents and weapons and the threat posed to U.S. forces, including the potential for the use of such agents in domestic terrorism. An unclassified precis of that briefing has been prepared by the intelligence community and distributed to members of the subcommittee.

The continuing proliferation of weapons of mass destruction, the spread of chemical and biological weapons technology and delivery

capabilities and the potential threat posed to U.S. military forces by the potential use of chemical or biological weapons on the battlefield have resulted in repeated expressions of concern by the Congress about the chemical and biological defense readiness of our U.S. forces. In meeting this changing and evolving threat, this committee has repeatedly stated that a strong Chemical and Biological Defense Program is an essential part of our national military strategy, both for ensuring the capability of U.S. military forces to fight on some future battlefield and as a major element of the U.S. counterproliferation program.

To address this threat, the Congress in Public Law 103-160 enacted a number of measures to strengthen the conduct of the Chemical and Biological Defense Program within the DOD. Public Law 103-160 also expressed the sense of Congress that the President should strengthen Federal interagency emergency planning for early detection and warning of, and response to potential terrorist use of chemical or biological agents or weapons, and for responses to emergencies or natural disasters involving industrial chemicals or the widespread outbreak of disease.

The recent attacks on the Tokyo subway system, New York's World Trade Center, and the Oklahoma City Federal Building have heightened concerns about our readiness to respond to a terrorist attack, particularly one involving the use of chemical or biological weapons. The subcommittee hopes today to gain an understanding of the planning and preparations to respond to such an incident and to the role played by the Department of Defense in that response, as well as other agencies. In fact, I hope to at some point in time have a follow-on briefing where we can talk specifically about the first response to incidents of this type in our cities and towns across America.

Ensuring that U.S. Armed Forces are prepared to fight on a battlefield that may be contaminated by chemical or biological agents has been a difficult and nagging problem for the military services. When the threat of use of chemical or biological weapons by an adversary is imminent, as it was during the gulf war, additional emphasis is placed on training and readiness to ensure that the troops are prepared. In intervening times, when the threat is not imminent, the emphasis on chemical and biological defense is reduced, and the preparedness of the force somewhat suffers. The issue for the Department of Defense is whether, in a time of expanding chemical and biological threat, U.S. Armed Forces can afford to reduce the emphasis on the Chemical and Biological Defense Program.

Following the gulf war and in response to congressional guidance provided in Public Law 103-160, the Department of Defense has undertaken a number of initiatives to improve the Chemical and Biological Defense Program. Many of these initiatives were reported to the Congress last year in the Department's Nuclear, Biological and Chemical Warfare Defense Annual Report for fiscal year 1995. These initiatives and others that have been undertaken in the past fiscal year will be discussed today by our witnesses.

At the request of Mr. Bateman, chairman, and Mr. Sisisky, ranking member, of the Readiness Subcommittee, the General Accounting Office began an assessment last year of the chemical and bio-

logical defense preparedness of early-deploying U.S. Army and Marine Corps units. The GAO's report to the House National Security Committee is expected around April 1996. Because the chemical and biological defense readiness of U.S. Armed Forces is a major driver for the DOD Chemical and Biological Defense Research and Development Program, I asked the GAO to submit a statement for the record that describes the current status of our forces' ability to operate and survive on a chemically or biologically contaminated battlefield and its assessment of the success of the measures taken by the Department to improve that ability.

In the GAO statement, we are told that the Department of Defense has made some progress in improving the chemical and biological defense capabilities of U.S. forces. Nevertheless, the GAO asserts that many of the shortcomings in this area that were experienced by our forces during the gulf war are still present. If the United States went to war today, these forces would experience many of the same problems they encountered in that conflict. U.S. forces still lack the ability to defend themselves adequately against chemical and biological agents, they lack critical defense equipment, and are inadequately trained to meet DOD standards. Medical units would be able to provide only very limited patient treatment in a contaminated environment.

In developing needed equipment, the DOD has had difficulty meeting some of its research goals. It has not established the fundamental underpinnings of a solid chemical and biological defense strategy: force integration, research and development, modernization, and logistic support plans are still in the drafting stage. The principal reason for this state of affairs is, according to the GAO, the overall low level of emphasis that DOD places on chemical and biological defense preparedness in contrast to the emphasis placed on traditional operational missions.

The GAO stopped short of recommending that the DOD apply more resources to this area. GAO acknowledges that decisions on how to evaluate risk and apply scarce resources to reduce force vulnerabilities falls within the purview of military judgment. Nevertheless, the GAO tells us that unless the Secretary of Defense, the Joint Chiefs of Staff, and the DOD as a whole, down to individual unit commanders, all increase their emphasis on improving the Armed Forces' chemical and biological defense preparedness, many of these problems are likely to remain unresolved. This issue of priority and command emphasis is one that I hope the gentlemen at the table today and the joint staff in particular will be able to address, and it is an issue that I would also hope would be addressed by the service chiefs tomorrow. A copy of the GAO's statement has been provided to each member of the subcommittee. Unless there is an objection, I will order the statement entered into the record. So ordered.

[The prepared statement of the Mr. Gebicke follows:]

United States General Accounting Office**GAO****Testimony****Before the House Committee on National Security,
Subcommittee on Military Research and Development**

For Release on Delivery
Expected at
3:00 p.m., EDT
Tuesday,
March 12, 1996

**Chemical and Biological
Defense****Emphasis Remains Insufficient
to Resolve Continuing
Problems**

Statement of Mark E. Gebicke, Director, Military Operations
and Capabilities Issues, National Security and International
Affairs Division



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Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to provide our assessment of the capability of U.S. forces to fight and survive while under attack by chemical and biological agents. Our work was requested by the Subcommittee on Readiness, House Committee on National Security, and addresses early-deploying U.S. Army and Marine Corps ground forces. Information was obtained from a wide range of officials to include those in the Office of the Secretary of Defense, the Joint Chiefs of Staff (JCS), the war-fighting commanders in chief (CINC), Department of the Army, Headquarters U.S. Marine Corps, U.S. Army Forces Command, U.S. Army Reserve Command, and at corps, division, and individual unit levels. We plan to issue a report on our work in April 1996.

As GAO and the Department of Defense (DOD) have reported on numerous occasions, during the Persian Gulf Conflict (1) many units arrived in the Persian Gulf without needed protective equipment and adequate training, (2) plans to vaccinate personnel to protect them from the effects of biological agents were inadequate, and (3) medical units lacked the ability to treat casualties in a chemically or biologically contaminated environment. U.S. forces would have been highly vulnerable to chemical or biological attack had they not had 6 months after arrival in the Gulf to deal with these shortcomings before offensive operations began.

Today U.S. forces face a continually increasing threat of chemical and biological warfare. A steadily increasing number of potential enemies now possess the technologies and capabilities to produce and deliver a wide range of chemical and biological agents. Although DOD has somewhat improved its forces' defensive capability, units designated for early deployment today face many of the same problems that were experienced during the Persian Gulf Conflict in 1990 and 1991. U.S. forces still lack the ability to adequately defend against chemical and/or biological agents and a degraded war-fighting capability could still result from persistent equipment, training, and medical shortcomings.

This situation is a result of the inconsistent but generally lower priority DOD--especially the Joint Chiefs of Staff (JCS) and the war-fighting Commanders-in-Chief (CINC)--assigns chemical and biological defense as evidenced by the limited funding, staffing, and mission priority chemical and biological defense activities receive. Shortcomings in chemical and biological defense are likely to continue unless the Secretary of Defense and the JCS Chairman specifically assign a higher priority to this area. DOD has spent less than 1 percent of its budget on chemical and biological warfare defense, and over the period 1992-1995, funding in real terms decreased by 30 percent. Our work gives us no reason to expect DOD to place greater emphasis on this area in the future. The salient details on past and present problems in the U.S. defense against chemical and biological warfare are discussed below.

EARLY-DEPLOYING UNITS LACK REQUIRED EQUIPMENT

Shortages of chemical and biological defense equipment are a long-standing problem. After the Persian Gulf Conflict, the Army changed its regulations in an attempt to ensure that early-deploying units would have sufficient equipment on hand upon deployment. This direction, contained in U.S. Forces Command Regulation 700-2, has not been universally implemented. Presently, neither the Army's more than five active divisions composing the crisis response force nor the early-deploying Army reserve units we visited had complied with the new stocking level requirements. All had shortages of critical equipment; three of the more than five active divisions had 50 percent or greater shortages of protective suits, and shortages of other critical items were as high as 84 percent, depending on the unit and the item. This equipment is normally procured with operation and maintenance funds.

These shortages occurred primarily because unit commanders consistently diverted operation and maintenance funds to meet what they considered higher priority requirements, such as base operating costs, quality-of-life considerations, and costs associated with other-than-war deployments such as those to Haiti and Somalia. Relative to the DOD budget, the cost of purchasing this protective equipment is low. Early-deploying active divisions in the continental United States could meet current stocking requirements for an additional cost of about \$15 million. However, unless funds are specifically designated for chemical and biological defense equipment, we do not believe unit commanders will spend operation and maintenance funds for this purpose. The shortages of on-hand stock are exacerbated by inadequate installation warehouse space for equipment storage, poor inventorying and reordering techniques, shelf-life limitations, and difficulty in maintaining appropriate protective clothing sizes.

The Army is presently considering decreasing units' stocking requirements to the levels needed to support only each early-deploying division's ready brigade and relying on depots to provide the additional equipment needed on a "just-in-time" basis before deployment. Other approaches under consideration by the Army include funding these equipment purchases through procurement accounts, and transferring responsibility for purchasing and storing this material on Army installations to the Defense Logistics Agency.

PROGRESS IN RESEARCH AND DEVELOPMENT
IS SLOWER THAN PLANNED

New and improved equipment is needed to overcome some DOD defensive shortfalls, and DOD is having difficulty meeting all of its planned chemical and biological defense research goals. Efforts to improve the management of the materiel development and acquisition process have so far had limited results and will not attain their full effect until at least fiscal year 1998.

In response to lessons learned in the Gulf War, Congress directed DOD to improve the coordination of chemical and biological doctrine, requirements, research, development, and acquisition among DOD and the military services.¹ DOD has acted. During 1994 and 1995, it established the Joint Service Integration Group to prioritize chemical and biological defense research efforts and develop a modernization plan and the Joint Service Materiel Group to develop research, development, acquisition, and logistics support plans. The activities of these two groups are overseen by a single DOD office -- the Assistant Secretary of Defense (Atomic Energy)(Chemical and Biological Matters). While these groups have begun to implement the congressional requirements of P.L. 103-160, progress has been slower than expected. At the time of our review, the Joint Service Integration Group expected to produce during 1996 its proposed (1) list of chemical and biological defense research priorities and (2) joint service modernization plan and operational strategy. The Joint Service Materiel Group expects to deliver its proposed plan to guide chemical and biological defense research, development, and acquisition in October 1996. Consolidated research and modernization plans are important for avoiding duplication among the services and otherwise achieving the most effective use of limited resources. It is unclear whether or when DOD will approve these plans. However, DOD officials acknowledged that it will be fiscal year 1998 at the earliest, about 5 years after the law was passed, before DOD can begin formal budgetary implementation of these plans. DOD officials told us progress by these groups has been adversely affected by personnel shortages and collateral duties assigned to the staff.

DOD efforts to field specific equipment and conduct research to address chemical and biological defense deficiencies have produced mixed results. On the positive side, DOD began to field the Biological Integrated Detection System in January 1996 and expects to complete the initial purchase of 38 systems by September 1996. However, DOD has not succeeded in fielding other needed equipment and systems designed to address critical battlefield deficiencies identified during the Persian Gulf Conflict and earlier. For example, work initiated in 1978 to develop an Automatic Chemical Agent Alarm to provide visual, audio, and command-communicated warnings of chemical agents remains incomplete. Because of service decisions to fund other priorities, DOD has approved and acquired only 103 of the more than 200 FOX mobile reconnaissance systems originally planned. Of the 11 chemical and biological defense research goals listed in DOD's 1995 Annual Report to the Congress, DOD met 5 by their expected completion date of January 1996. Some were not met. For example, a DOD attempt to develop a less corrosive and labor-intensive decontaminate solution is now not expected to be completed until 2002.

¹ The National Defense Authorization Act For Fiscal Year 1994, Public Law 103-160, November 30, 1993.

ARMY AND MARINE FORCES ARE INADEQUATELY TRAINED FOR CHEMICAL/BIOLOGICAL DEFENSE

Chemical and biological defense training at all levels has been a constant problem for many years. For example, in 1986, DOD studies found that its forces were inadequately trained to conduct critical tasks. It took 6 months during the Persian Gulf Conflict to prepare forces in theater to defend against chemical and biological agents. However, these skills declined again after this conflict. A 1993 Army Chemical School study found that a combined arms force of infantry, artillery, and support units would have extreme difficulty performing its mission and suffer needless casualties if forced to operate in a chemical or biological environment because the force was only marginally trained.

Army studies conducted from 1991 to 1995 showed serious weaknesses at all levels in chemical and biological defense skills. Our analysis of Army readiness evaluations, trend data, and lessons learned reports from this period also showed individuals, units, and commanders alike had problems performing basic tasks critical to surviving and operating in a chemical or biological environment. Despite DOD efforts-- such as doctrinal changes and command directives--designed to improve training in defense against chemical and biological warfare since the Gulf War, U.S. forces continue to experience serious weaknesses in (1) donning protective masks, (2) deploying detection equipment, (3) providing medical care, (4) planning for the evacuation of casualties, and (5) including chemical and biological issues in operational plans. The Marine Corps also continues to experience similar problems.

In addition to individual service training problems, the ability of joint forces to operate in a contaminated environment is questionable. In 1995, only 10 percent of the joint exercises conducted by four major CINCs included training to defend against chemical and biological agents. None of this training included all 23 required chemical/biological training tasks, and the majority included less than half of these tasks. Furthermore, these CINCs plan to include chemical/biological training in only 15 percent of the joint exercises for 1996. This clearly demonstrates the lack of chemical and biological warfare training at the joint service level. There are two fundamental reasons for this. First, CINCs generally consider chemical and biological training and preparedness to be the responsibility of the individual services. Second, CINCs believe that chemical and biological defense training is a low priority relative to their other needs.

MEDICAL UNITS LACK EQUIPMENT AND TRAINING

We examined the ability of U.S. Army medical units that support early-deploying Army divisions to provide treatment to casualties in a chemically and biologically contaminated environment. We found that these units often lacked needed equipment and training.

Lack of Equipment

Medical units supporting early-deploying Army divisions we visited often lacked critical equipment needed to treat casualties in a chemically or biologically contaminated environment. For example, these units had only about 50 to 60 percent of their authorized patient treatment and decontamination kits. Some of the patient treatment kits on hand were missing critical items such as drugs used to treat casualties. Also, none of the units had any type of collective shelter to treat casualties in a contaminated environment. Army officials acknowledged that the inability to provide treatment in the forward area of battle would result in greater rates of injury and death. Old versions of collective shelters are unsuitable, unserviceable, and no longer in use; new shelters are not expected to be available until fiscal year 1997 at the earliest.

Lack of Training

Few Army physicians in the units we visited had received formal training on chemical and biological patient treatment beyond that provided by the Basic Medical Officer course. Further instruction on chemical and biological patient treatment is provided by the medical advanced course and the chemical and biological casualty management course. The latter course provides 6-1/2 days of classroom and field instruction needed to save lives, minimize injury, and conserve fighting strength in a chemical or biological warfare environment. During the Persian Gulf Conflict, this course was provided on an emergency basis to medical units already deployed to the Gulf. In 1995, 47 to 81 percent of Army physicians assigned to early-deploying units had not attended the medical advanced course, and 70 to 97 percent had not attended the casualty management course.

Both the advanced and casualty management courses are optional, and according to Army medical officials, peacetime demands to provide care to service members and their dependents often prevented attendance. Also, the Army does not monitor those who attend the casualty management course, nor does it target this course toward those who need it most, such as those assigned to early-deploying units.

Vaccine Stocks and Immunization Plans

DOD has inadequate stocks of vaccines for known threat agents, and an immunization policy established in 1993 that DOD so far has chosen not to implement. DOD's program to vaccinate the force to protect them against biological agents will not be fully effective until these problems are resolved.

Though DOD has identified which biological agents are critical threats and determined the amount of vaccines that should be stocked, we found that the amount of vaccines stocked remains insufficient to protect U.S. forces, as it was during the Persian Gulf Conflict. Problems also exist with regard to the vaccines available to DOD. Only a few

biological agent vaccines have been approved by the Food and Drug Administration (FDA). Many remain in Investigational New Drug (IND) status. Although IND vaccines have long been safely administered to personnel working in DOD vaccine research and development programs, the FDA usually requires large-scale field trials in humans to demonstrate new drug safety and effectiveness before approval. DOD has not performed such field trials due to ethical and legal considerations. DOD officials said that they hoped to acquire a prime contractor during 1996 to subcontract vaccine production and do what is needed to obtain FDA approval of vaccines currently under investigation.

Since the Persian Gulf Conflict, DOD has consolidated the funding and management of several biological warfare defense activities, including vaccines, under the new Joint Program Office for Biological Defense. In November 1993, DOD established a policy to stockpile sufficient biological agent vaccines and to inoculate service members assigned to high-threat areas or to early-deploying units before deployment. The JCS and other high-ranking DOD officials have not yet approved implementation of the immunization policy. The draft policy implementation plan is completed and is currently under review within DOD. However, this issue is highly controversial within DOD, and whether the implementation plan will be approved and carried out is unclear. Until that happens, service members in high-threat areas or designated for early deployment in a crisis will not be protected by approved vaccines against biological agents.

PROBLEMS STEM FROM LACK OF EMPHASIS ON PREPARATION FOR CHEMICAL/BIOLOGICAL WARFARE

The primary cause for the deficiencies in chemical and biological defense preparedness is a lack of emphasis up and down the line of command in DOD. In the final analysis, it is a matter of commanders' military judgment to decide the relative significance of risks and to apply resources to counter those risks that the commander finds most compelling. DOD has decided to concentrate on other priorities and consequently to accept a greater risk regarding preparedness for operations on a contaminated battlefield.

Funding

Chemical and biological defense funding allocations are being targeted by the Joint Staff and DOD for reduction in their attempts to fund other, higher priority programs. DOD allocates less than 1 percent of its total budget to chemical and biological defense. Annual funding for this area has decreased by over 30 percent in constant dollars since fiscal year 1992, from approximately \$750 million in that fiscal year to \$504 million in 1995. This reduction has occurred in spite of the current U.S. intelligence assessment that the chemical and biological warfare threat to U.S. forces is increasing and the importance of defending against the use of such agents in the changing worldwide military environment.

Funding could decrease even further. On October 26, 1995, the Joint Requirements Oversight Council and the JCS Chairman proposed to the Office of the Secretary of Defense (OSD) a cut of \$200 million for the next 5 years (\$1 billion total) to the counterproliferation budget. The counterproliferation program element in the DOD budget includes funding for the joint nuclear, chemical, and biological defense program as well as vaccine procurement and other related counterproliferation support activities. If implemented, this cut would severely impair planned chemical and biological defense research and development efforts and reverse the progress that has been made in several areas, according to DOD sources. OSD supported only an \$800 million cut over 5 years and sent the recommendation to the Secretary of Defense. On March 7, 1996, we were told that DOD was now considering a proposed funding reduction of \$33 million.

Staffing and Monitoring

The battle staff chemical officer/chemical noncommissioned officers are a commander's principal trainers and advisers on chemical and biological defense operations and equipment operations and maintenance. We found that chemical and biological officer staff positions are being eliminated and that when filled, staff officers occupying the position are frequently assigned collateral tasks that reduces the time available to manage chemical and biological defense activities. At U.S. Army Forces Command and U.S. Army III Corps headquarters, for example, chemical staff positions are being reduced. Also, DOD officials told us that the Joint Service Integration and Joint Service Materiel Groups have made limited progress largely because not enough personnel are assigned to them and collateral duties are assigned to the staff. We also found that chemical officers assigned to a CINC's staff were frequently tasked with duties not related to chemical and biological defense.

The lower emphasis given to chemical and biological matters is also demonstrated by weaknesses in the methods used to monitor their status. DOD's current system for reporting readiness to the Joint Staff is the Status of Resources and Training System (SORTS). We found that the effectiveness of SORTS for evaluating unit chemical and biological defense readiness is limited largely because (1) it allows commanders to be subjective in their evaluations, (2) it allows commanders to determine for themselves which equipment is critical, and (3) reporting remains optional at the division level. We also found that after-action and lessons-learned reports and operational readiness evaluations of chemical and biological training are flawed. At the U.S. Army Reserve Command there is no chemical or biological defense position. Consequently, the U.S. Army Reserve Command does not effectively monitor the chemical and biological defense status of reserve forces.

Mission Priority

The priority given to chemical and biological defense varied widely. Most CINCs assign chemical and biological defense a lower priority than other threats. Even though the Joint

Staff has tasked CINCs to ensure that their forces are trained in certain joint chemical and biological defense tasks, the CINCs we visited considered such training a service responsibility. Several DOD officials said that U.S. forces still face a generally limited, although increasing, threat of chemical and biological warfare.

At Army corps, division, and unit levels, the priority given to this area depended on the commander's opinion of its relative importance. At one early-deploying division we visited, the commander had an aggressive system for chemical and biological training, monitoring, and reporting. At another, the commander had made a conscious decision to emphasize other areas, such as other-than-war deployments and quality-of-life considerations. As this unit was increasingly being asked to conduct operations other than war, the commander's emphasis on the chemical and biological warfare threat declined.

Officials at all levels said training in chemical and biological preparedness was not emphasized because of higher priority taskings, low levels of interest by higher headquarters, difficulty working in cumbersome and uncomfortable protective clothing and masks, the time-consuming nature of the training, and a heavy reliance on post-mobilization training and preparation.

We have no means to determine whether increased emphasis on chemical and biological warfare defense is warranted at the expense of other priorities. This is a matter of military judgment by DOD and of funding priorities by DOD and the Congress. We anticipate that in our report due in April 1996, we will recommend that the Secretary of Defense reevaluate the low priority given to chemical and biological defense and consider adopting a single manager concept for the execution of the chemical and biological program given the increasing chemical and biological warfare threat and the continuing weakness in the military's defense capability. Further, we anticipate recommending that the Secretary consider elevating the office for current oversight to its own Assistant Secretary of Defense level, rather than leaving it in its present position as part of the Office of the Assistant Secretary for Atomic Energy. We may make other recommendations concerning opportunities to improve the effectiveness of existing DOD chemical and biological activities.

We would be pleased to respond to any questions you may have.

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Mr. WELDON. Today's hearing will consist of two panels. And by the way, I am looking for the panels to recommend in anticipation of possible plus-ups in defense funding through our authorization and appropriations bills this year any recommendations on the record or provided for the record at a later point in time of areas that we might provide some plus-ups in terms of dollars to assist us in this effort, realizing that this Congress will probably increase the overall number for defense spending in the fiscal year 1997 budget.

The first panel today will address the capabilities and preparedness of U.S. forces to deal with the chemical and biological threat on the battlefield and measures being taken by the DOD to improve these capabilities. The witnesses on this panel are Dr. Theodore Prociv, Deputy Assistant Secretary of Defense for Chemical and Biological Matters; Maj. Gen. George Friel, Commander of the U.S. Army Chemical and Biological Defense Command; and Rear Adm. Scott Fry, Deputy Director for Strategy and Policy, J-5 of the Joint Staff. Gentlemen, I welcome you, and we look forward to your testimony.

The second panel will discuss DOD and interagency planning and preparation for response to possible terrorist use of chemical and biological threats in an urban or other setting in the United States. That will lead to the follow-on that I talked about earlier in terms of what our response would be in this country if we have other incidents similar to what occurred in the World Trade Center bombing or the bombing at Oklahoma City that, in fact, could possibly include chemical or biological agents.

Since Mr. Spratt is not here, I would turn to Mr. Taylor as the ranking member if he has any opening statement he would like to make, and I will unanimously enter the formal statement of Mr. Spratt into the record at this point in time.

Mr. Taylor.

Mr. TAYLOR. Thank you, Mr. Chairman. That was going to be my request. It is my understanding that Mr. Spratt has to be elsewhere, and I would only ask that he be allowed to do so. Thank you very much.

Mr. WELDON. Without objection.

Dr. Prociv.

STATEMENT OF DR. THEODORE M. PROCIV, DEPUTY ASSISTANT TO THE SECRETARY OF DEFENSE, NUCLEAR, CHEMICAL AND BIOLOGICAL DEFENSE PROGRAMS, CHEMICAL AND BIOLOGICAL MATTERS

Mr. PROCIV. Thank you very much, Mr. Chairman. It is a pleasure to be here to testify before this committee on behalf of the Department of Defense on our DOD chemical and biological program. We appreciate the committee's past strong support and their continued interest in our vital program. With your permission, sir, I would like to submit my written record, which is a comprehensive overview of the entire program. And with your concurrence, I will also make some opening remarks at this point.

Mr. WELDON. So ordered.

Mr. PROCIV. I would like to introduce the other witnesses with me today. Maj. Gen. George Friel is here. He is the commander of

the U.S. Army Chemical and Biological Defense Command in Aberdeen, Md. He represents the executive agent for this program. Also with me is Rear Adm. Scott Fry, deputy director for strategy and policy, J-5. Sitting behind me also are some of our colleagues who will help us in cases where we may get into more technical issues. Col. John Doesburg is the director of the Joint Biological Defense Program Office and Col. Gary Hurst is from the Medical R&D Command. They represent two commands which we work very closely with in these programs.

The defense acquisition community continues to be fully committed to a strong Chemical and Biological Defense Program that improves the ability of our forces to survive and fight in a contaminated environment. Proliferation of chemical and biological weapons continues to be a global problem. We believe that at least 25 nations today have a chemical warfare capability and at least 11 have BW or emerging BW programs. In addition, there is a significant number that have ballistic missile delivery capabilities. The risk of the United States or allied coalition involvement in CW and BW is higher, we believe, than it has ever been in history.

The current DOD Chemical and Biological Defense Program is threat-driven, not technology-driven. We have in place a process which links threat requirements and programs, or TRP process, as we call it. This process ensures that the CB threat drives the user to identify requirements which in turn the acquisition community can then develop into programs. We have concentrated very hard on making sure that there is a linkage between these programs and have in the last year eliminated a number of programs that did not link into the requirements and threat process. Also, I might mention in addition that we have had the intelligence community do a complete threat environment projection and a series of what we call STARS—situational threat assessment reports—for the various parts of the chemical-biological defense program, so we are solidly based in intelligence and threat information now.

The Public Law 103-160 of the fiscal year 1994 National Defense Authorization Act directed significant management and oversight initiatives to improve our program. We have made great progress in implementation of these initiatives, I believe. Details of the significant improvements are spelled out in my written statement. I would like to emphasize, however, that from my perspective, the consolidation of funding resources at the DOD level has been the single most important element responsible for major improvements leading to the jointness, cost effectiveness, and the execution of the program.

Our improved management of the program revolves around a new joint service agreement for the management of the DOD CB defense program. This agreement created the Joint NBC Defense Board; the Joint Service Integration Group, which is a group of users—and when I say users, I mean that these are the real war fighters who are responsible for the requirements—and the Joint Service Materiel Group, which is the group that gives us the materiel solutions that we might be able to pursue in order to satisfy the requirements.

Our fiscal year 1997 budget request is approximately \$505 million. Resources allow continued progress within research and devel-

opment, provide procurement funding to continue force modernization efforts, and also to field new CB defense equipment. The priority strategy of our program is to correct the Desert Storm-identified deficiencies and to develop and field improvements within our three mission areas, and that is contamination avoidance, protection—and the protection part includes the medical aspects of survival and the vaccine program—and decontamination systems. We are placing a very high priority on developing and fielding early warning biological detection systems, biowarfare vaccine production, and consolidating user requirements into jointly coordinated programs to satisfy all of the four services. These are our three top priorities.

In summation, although significant progress has been made in the program, serious challenges remain with both CB defense technology approaches and with future budget constraints. We are continually analyzing our priorities and resources required to execute an effective program. Our programs, just as all other important programs, will continue to compete for various scarce resources.

To provide you with more details of how we are organized in the chemical and biological defense program and some of the successes that we have, Maj. Gen. George Friel will now speak.

[The prepared statement of Mr. Prociv follows:]

RECORD STATEMENT

STATEMENT BY

DR. THEODORE M. PROCIV

DEPUTY ASSISTANT TO THE SECRETARY OF DEFENSE

(NUCLEAR, AND CHEMICAL AND BIOLOGICAL DEFENSE PROGRAMS)

(CHEMICAL/BIOLOGICAL MATTERS)

BEFORE

SUBCOMMITTEE ON RESEARCH AND DEVELOPMENT

COMMITTEE ON NATIONAL SECURITY

HOUSE OF REPRESENTATIVES

MARCH 12, 1996

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HOUSE NATIONAL SECURITY COMMITTEE

MR CHAIRMAN AND MEMBERS OF THE COMMITTEE:

THANK YOU FOR THIS OPPORTUNITY TO DISCUSS THE DEPARTMENT OF DEFENSE CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM. I APPRECIATE THE COMMITTEE'S CONTINUED INTEREST AND SUPPORT IN THIS VITAL FORCE PROTECTION READINESS AREA. KEY ELEMENTS OF THE UNITED STATES' NATIONAL SECURITY COMMUNITY CONTINUE TO DEFINE THE HIGH PRIORITY OF DETERRING THE PROLIFERATION OF WEAPONS OF MASS DESTRUCTION AND THEIR DELIVERY SYSTEMS. THE PRESIDENT EMPHASIZED IN HIS FEBRUARY 1995 NATIONAL SECURITY STRATEGY THAT A KEY PART OF OUR NATIONAL STRATEGY IS TO SEEK TO STEM THE PROLIFERATION OF CHEMICAL AND BIOLOGICAL WEAPONS AND TO DEVELOP AN EFFECTIVE CAPABILITY TO DEAL WITH THESE THREATS. OUR NATIONAL MILITARY STRATEGY, PUBLISHED BY THE JOINT CHIEFS OF STAFF, DESCRIBED THE THREAT OF WEAPONS OF MASS DESTRUCTION AS ONE OF THE FOUR PRINCIPAL DANGERS WHICH OUR MILITARY MUST ADDRESS.

THE DEFENSE ACQUISITION COMMUNITY IS FULLY COMMITTED TO SUPPORTING THESE NATIONAL SECURITY GOALS, BY DEVELOPING A CHEMICAL/BIOLOGICAL DEFENSE PROGRAM THAT IMPROVES OUR CURRENT CAPABILITIES AND RESPONDS TO WARFIGHTER NEEDS OF THE SERVICES AND THE CINCS.

OUR ACQUISITION OF CB DEFENSE EQUIPMENT IS BASED ON A THREAT - REQUIREMENTS - PROGRAMS PROCESS. UNDER THIS PROCESS THE CB THREAT DRIVES THE REQUIREMENTS WHICH IN TURN DRIVE OUR PROGRAMS.

THE CHEMICAL/BIOLOGICAL THREAT

I WOULD LIKE TO SUMMARIZE THE DOD PERSPECTIVE OF THE CB THREAT. CURRENTLY, THERE ARE OVER TWENTY COUNTRIES WITH KNOWN OR SUSPECTED CHEMICAL AND BIOLOGICAL WEAPONS PROGRAMS. SOME OF THESE ARE RELICS FROM THE COLD WAR, OTHERS ARE THE RESULT OF CURRENT TENSIONS AND INSTABILITIES, AND STILL OTHERS DEFY EXPLANATION BASED ON OUR CONCEPTS OF LOGIC AND DECISION MAKING. THESE COUNTRIES POSE THREATS OF VARYING DEGREES TO THE DEPLOYED AND DEPLOYING MILITARY FORCES OF THE UNITED STATES. FURTHER, BECAUSE THE COUNTRIES WHICH ARE OF THE GREATEST CONCERN TO THE UNITED STATES, ARE ALSO IN REGIONS IN WHICH THE UNITED STATES HAS WELL DEFINED NATIONAL SECURITY INTERESTS; IT IS OF PARAMOUNT IMPORTANCE THAT WE CONTINUE TO MAINTAIN A CREDIBLE, ROBUST CAPABILITY TO

PROTECT OUR FORCES AND OPERATE EFFECTIVELY IN A CB WARFARE CONTAMINATED ENVIRONMENT IN EXECUTING MILITARY OPERATIONS.

THREAT, REQUIREMENTS, PROGRAMS (TPR) PROCESS

I WANT TO EMPHASIZE THAT OUR CURRENT DOD CHEMICAL/BIOLOGICAL DEFENSE PROGRAM IS THREAT DRIVEN, NOT TECHNOLOGY DRIVEN. CB THREAT DRIVES THE USER TO IDENTIFY REQUIREMENTS, FOR WHICH, IN TURN WE DEVELOP PROGRAMS. OUR THREAT ASSESSMENTS ARE PREPARED IN DISCRETE, TAILORED PACKAGES FOR DIFFERENT SCENARIOS. DURING THE PAST YEAR WE HAVE PLACED SIGNIFICANT EMPHASIS ON UPDATED AND IMPROVED THREAT ASSESSMENTS. THE DEFENSE INTELLIGENCE AGENCY HAS RECENTLY COMPLETED THE CHEMICAL AND BIOLOGICAL THREAT ENVIRONMENTAL PROJECTION (TEP), AND IS CLOSE TO FINALIZATION OF THE FIRST CHEMICAL/BIOLOGICAL DEFENSE CAPSTONE SYSTEM THREAT ASSESSMENT REPORT (STAR). IN ADDITION WE HAVE RECENTLY RECEIVED THE APPROVED VACCINE SYSTEM THREAT ASSESSMENT REPORT. THESE ASSESSMENTS ARE ANALYZED FOR THEIR IMPACT ON HOW WE FIGHT, AND REQUIREMENTS GENERATED TO MEET USER IDENTIFIED MATERIEL SHORTCOMINGS. REQUIREMENTS IN THE FORM OF MISSION NEEDS STATEMENTS AND OPERATIONAL REQUIREMENT DOCUMENTS ARE GENERATED BY OUR CHEMICAL/BIOLOGICAL JOINT SERVICES USER COMMUNITY UNDER THE MANTLE OF THE NEW JOINT SERVICE INTEGRATION GROUP (JSIG), A RELATIVELY NEW ORGANIZATION. THEREFORE, THE END RESULT IS THAT OUR PROGRAMS AND TECHNOLOGIES ARE DRIVEN BY VALIDATED THREATS AND USER MISSION REQUIREMENTS, NOT BY TECHNOLOGIES.

EVOLUTION OF THE FY 97 DOD CHEMICAL/BIOLOGICAL DEFENSE PROGRAM

PRIOR TO FISCAL YEAR 1995, EACH OF THE SERVICES EXECUTED THEIR OWN CHEMICAL/BIOLOGICAL DEFENSE (CBD) PROGRAMS. THE SERVICE'S DEFINED THEIR OWN REQUIREMENTS, AND THEN PLANNED, PROGRAMMED AND EXECUTED THEIR OWN RD&A EFFORTS TO MEET CBD READINESS NEEDS. BASED ON OPERATION DESERT STORM EXPERIENCES AND LESSONS LEARNED, CONGRESS EXPRESSED STRONG CONCERN ABOUT THE OVERALL CBD READINESS OF U.S. ARMED FORCES. THE CONGRESS STATED THAT A HIGH PRIORITY MUST CONTINUE TO BE PLACED ON CBD READINESS, AND THAT CBD R&D EFFORTS SHOULD NOT BE SUBJECTED TO (SERVICE DRIVEN) DISPROPORTIONATE CUTS. PUBLIC LAW 103-160, SECTION 1701 OF THE NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 1994, DIRECTED THE SECRETARY OF DEFENSE TO TAKE THE FOLLOWING SPECIFIC MANAGEMENT AND OVERSIGHT ACTIONS:

- ASSIGN RESPONSIBILITY FOR OVERALL COORDINATION AND INTEGRATION OF DOD CBD (NON-MEDICAL AND MEDICAL) RDT&E PROGRAMS TO A SINGLE OFFICE WITHIN THE OSD.
- EXERCISE OVERSIGHT OF THE PROGRAMS THROUGH THE DEFENSE ACQUISITION BOARD (DAB).
- DESIGNATE THE ARMY AS EXECUTIVE AGENT FOR DOD TO COORDINATE AND INTEGRATE RDT&E PROGRAMS OF ALL SERVICES.
- SUBMIT FUNDING REQUESTS FOR CBD RDT&E IN THE DOD BUDGET AS A SEPARATE ACCOUNT. FUNDING REQUESTS MAY NOT BE INCLUDED IN THE SERVICE BUDGETS.

THE DEPARTMENT HAS IMPLEMENTED ALL OF THE PUBLIC LAW 103-160 REQUIREMENTS. FOR THE PAST TWO YEARS, WE HAVE DEVELOPED AND FORWARDED THE BUDGET REQUEST FOR ALL CBD RESEARCH, DEVELOPMENT AND ACQUISITION (RDA) EFFORTS IN UNIQUE PROGRAM ELEMENTS AND PROCUREMENT LINES IN THE DEFENSE-WIDE APPROPRIATION ACCOUNT. ALL HISTORICALLY SEPARATE SERVICE FUNDING LINES WERE CONSOLIDATED AND INTEGRATED INTO A SINGLE COORDINATED PROGRAM. IN THE PROCESS, A NUMBER OF THE INDIVIDUAL SERVICE EFFORTS HAVE BEEN RESTRUCTURED AS JOINT-SERVICE PROGRAMS.

ONCE APPROPRIATED, FUNDING IS SUB-ALLOCATED BACK TO A SERVICE FOR EXECUTION OF EACH SPECIFIC ACQUISITION EFFORT. WE HAVE CONDUCTED HIGH LEVEL REVIEWS OF THE PROGRAM THROUGH THE OVERARCHING INTEGRATED PRODUCT TEAM (O IPT) PROCESS OF THE DEFENSE ACQUISITION BOARD (DAB). IN ADDITION, MY OFFICE IN COORDINATION WITH THE JOINT SERVICE SCIENCE & TECHNOLOGY ORIENTED AGENCIES HAVE REVIEWED THE TECHNOLOGY BASE ON AN ANNUAL BASIS. ALTHOUGH OUR OFFICE MAINTAINS STRONG OVERSIGHT AND HAS THE FINAL APPROVAL OF ALL PLANNING, PROGRAMMING, AND BUDGETING ACTIONS, THE CB DEFENSE PROGRAM IS STRUCTURED SO THAT SERVICES MANAGE AND EXECUTE IT THROUGH THE MECHANISMS ESTABLISHED BY THE JOINT SERVICE AGREEMENT FOR NBC DEFENSE MANAGEMENT, SIGNED AUGUST 1994.

FROM MY PERSPECTIVE, THE CONSOLIDATION OF FUNDING RESOURCES AT THE DOD LEVEL HAS BEEN THE SINGLE MOST IMPORTANT ELEMENT RESPONSIBLE FOR MAJOR IMPROVEMENTS LEADING TO INCREASED COST EFFECTIVENESS AND EXECUTION OF THE PROGRAM. WE HAVE HAD OUR GROWING PAINS IN EXECUTING THIS REVOLUTIONARY PROGRAM; HOWEVER WE CONTINUE TO IMPROVE THE OVERSIGHT AND EXECUTION OF KEY PROGRAMS. IN THE PAST, OUR RESEARCH & DEVELOPMENT PROGRAMS WERE LABELED AS TOO LONG AND

SLOW. WITH OUR NEW CONSOLIDATED MANAGEMENT STRUCTURE AND OUR EMPHASIS ON JOINT REQUIREMENTS AND DEVELOPMENTAL PROGRAMS, WE WILL FIELD EQUIPMENT IN A MORE RESPONSIVE MANNER.

HOW THE DOD CBD PROGRAM IS MANAGED

THE ASSISTANT SECRETARY OF DEFENSE FOR NUCLEAR, AND CHEMICAL AND BIOLOGICAL DEFENSE PROGRAMS -ATSD(NCB), IS THE OSD OFFICE RESPONSIBLE FOR MANAGEMENT AND OVERSIGHT OF THE CBD PROGRAM. ATSD(NCB) IS THEREFORE RESPONSIBLE FOR THE OVERSIGHT, COORDINATION AND INTEGRATION OF ALL CB DEFENSE MEDICAL AND NON-MEDICAL EFFORTS; AND PROVIDES THE OVERALL GUIDANCE FOR PLANNING, PROGRAMMING, BUDGETING, AND EXECUTING THE CBD PROGRAMS.

THE SECRETARY OF THE ARMY AS THE EXECUTIVE AGENT IS RESPONSIBLE FOR ENSURING THE COORDINATION AND INTEGRATION OF THE SERVICES' CBD REQUIREMENTS AND RDA PROGRAMS. FOR NON-MEDICAL CBD PROGRAMS, THE EXECUTIVE AGENT ACCOMPLISHES COORDINATION AND INTEGRATION THROUGH THE JOINT NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DEFENSE BOARD AND ITS SECRETARIAT, AS DEFINED IN THE JOINT SERVICE AGREEMENT FOR NBC DEFENSE MANAGEMENT. TWO SUBORDINATE GROUPS SUPPORT THE JOINT NBC DEFENSE BOARD. THE JOINT SERVICE INTEGRATION GROUP (JSIG) IS RESPONSIBLE FOR JOINT CBD REQUIREMENTS, PRIORITIES, TRAINING, AND DOCTRINE. THE JSIG ALSO COORDINATES WITH THE JOINT WARFARE CAPABILITY ASSESSMENT (JWCA) PROCESS, REGARDING THE PRIORITIZATION OF REQUIREMENTS. THE JOINT SERVICE MATERIEL GROUP (JSMG) IS RESPONSIBLE FOR IDENTIFYING MATERIEL SOLUTIONS TO THE REQUIREMENTS AND COORDINATING AND INTEGRATING NON-MEDICAL RESEARCH, DEVELOPMENT AND ACQUISITION EFFORTS. THESE GROUPS PERFORM THE PLANNING AND PROGRAMMING FUNCTIONS FOR CBD RDA AND SUBMIT APPROPRIATE DOCUMENTATION THROUGH MY OFFICE, THROUGHOUT THE PPBS CYCLE. IN ADDITION TO REVIEW AND DEVELOPMENT BY OUR JOINT SERVICE AGREEMENT AGENCIES; AS MENTIONED ABOVE, THE PROGRAM IS ALSO REVIEWED AND COORDINATED WITH THE JOINT WARFARE CAPABILITY ASSESSMENT (JWCA) PROCESS OF THE JOINT REQUIREMENTS OVERVIEW COMMITTEE (JROC).

UNDER THE OVERSIGHT OF THE ATSD(NCB), THE EXECUTIVE AGENT, THE US MEDICAL RESEARCH DEVELOPMENT COMMAND (USMRDC) AND THE ARMED SERVICES BIOMEDICAL RESEARCH EVALUATION AND MANAGEMENT (ASBREM) COMMITTEE DEVELOPS, REVIEWS AND APPROVES

THE MEDICAL CB DEFENSE PROGRAMS. THE ASBREM IS CO-CHAIRED BY ASD(HEALTH AFFAIRS) THE DIRECTOR, DEFENSE RESEARCH & ENGINEERING AND ATSD(NCB).

THE MILITARY DEPARTMENTS' ACQUISITION ORGANIZATIONS MANAGE THE INDIVIDUAL CB DEFENSE EFFORTS ACCORDING TO SERVICE AND DOD DIRECTIVES. THROUGH THE JSMG, THE SERVICES HAVE ESTABLISHED PROCEDURES TO ENSURE THAT INDIVIDUAL DEVELOPMENT EFFORTS ARE INTEGRATED INTO AN OVERALL FRAMEWORK FOR CHEMICAL/BIOLOGICAL DEFENSE.

PROGRAM OVERVIEW

THE CB DEFENSE PROGRAM (CBDP) CONSISTS OF ALL DOD RD&A EFFORTS WHICH DEVELOP AND PROCURE SYSTEMS PROVIDING U.S. FORCES THE ABILITY TO DETER AND DEFEND AGAINST CHEMICAL AND BIOLOGICAL AGENTS. THE DEPARTMENT'S FY97 BUDGET REQUEST FOR THE DOD CHEMICAL/BIOLOGICAL DEFENSE PROGRAM IS APPROXIMATELY \$505M; \$297M FOR RDT&E, AND \$208M FOR PROCUREMENT. THESE RESOURCES ALLOW CONTINUATION OF RESEARCH PROGRAMS WHICH ARE NEARING COMPLETION OF DEVELOPMENT AND PERMIT IMPORTANT TECHNOLOGY BASE RESEARCH WORK TO CONTINUE ON HIGH PRIORITY AREAS.

HIGHLIGHTS OF OUR FY97 PROCUREMENT REQUEST INCLUDE:

- VACCINE PROCUREMENT FUNDING
- CONTINUED FIELDING OF IMPROVED PROTECTIVE MASKS;
- INITIAL PROCUREMENT OF JOINT SERVICE LIGHTWEIGHT INTEGRATED SUIT TECHNOLOGY (JSLIST) CLOTHING ENSEMBLES;
- CONTINUED MODIFICATIONS TO THE NBC RECONNAISSANCE SYSTEM BLOCK I UPGRADES TO ACTIVE FIELD UNITS;
- PRODUCT IMPROVEMENT UPGRADES TO 38 FIELDED BIOLOGICAL INTEGRATED DETECTION SYSTEMS (BIDS) WHICH IMPROVES THE FIELDDED PROTOTYPE VERSION OF THE BIDS;
- INITIAL PRODUCTION FUNDING FOR THE IMPROVED ADVANCED CHEMICAL AGENT ALARM
- CONTINUATION OF CHEMICAL AGENT, IMPROVED POINT DETECTION SYSTEM (IPDS) FIELDING AND INSTALLATION ON SHIPS,
- INITIAL ACQUISITION OF THE SHIPBOARD AUTOMATIC LIQUID AGENT DETECTOR (SALAD) FOR THE NAVY.

JOINT AND SERVICE UNIQUE RD&A EFFORTS ARE STRUCTURED TO SUPPORT THE FRAMEWORK OF THE THREE MISSION AREAS OF CB DEFENSE: CONTAMINATION AVOIDANCE (DETECTION, IDENTIFICATION, WARNING/REPORTING AND RECONNAISSANCE), FORCE PROTECTION

(INDIVIDUAL, COLLECTIVE AND MEDICAL SUPPORT) AND DECONTAMINATION. IT IS ESSENTIAL TO VIEW ALL CB DEFENSE PROGRAMS AS AN INTEGRATION OF SYSTEMS, ALL OF WHICH ARE IMPORTANT TO FORCES' SURVIVAL. WITHIN THE CB DEFENSE MISSION AREA, YOU DON'T GET HALF THE PROTECTION IF YOU PROVIDE HALF OF THE EQUIPMENT. YOU NEED IT ALL TO SURVIVE.

THE CURRENT CB PROGRAM SUPPORTS WARFIGHTERS ACROSS THE BOARD. IT FOCUSES ON FORCE PROTECTION FOR ALL THE SERVICES IN ALL ENVIRONMENTS. THE PROGRAMS IMPACT ALL JOINT WARFIGHTING CAPABILITIES, WHILE PROVIDING AN INTEGRATED SYSTEM OF SYSTEMS ON THE BATTLEFIELD.

SHORTCOMINGS AND IMPROVEMENTS

IMPORTANT CB DEFENSE DEFICIENCIES WERE REPORTED DURING AND AFTER OPERATION DESERT STORM. OUR OVERALL CB DEFENSE PROGRAM IS FOCUSED ON DEVELOPING AND FIELDING IMPROVED SYSTEMS WHICH OVERCOME THESE DEFICIENCIES. BW DETECTION IS LIMITED TO BASIC POINT DETECTION FOR FIELDED FORCES, WITH LIMITED COVERAGE OF KEY AIR FIELDS, AND SEA PORTS AND LOGISTICS STAGING AREAS. OUR CURRENT PROGRAM CONCENTRATES ON FIELDING EARLY WARNING AND IMPROVED POINT DETECTION (BETTER SENSITIVITY AND IDENTIFICATION). CW DETECTION IS LIMITED TO NERVE AGENT DETECTORS WITH CURRENT TECHNOLOGY LIMITATIONS. THE CURRENT PROGRAM FOCUSES ON IMPROVED CHEMICAL DETECTORS (POINT AND STAND-OFF) FOR FULL COVERAGE OF INDIVIDUALS, SHIPS, AND AIRCRAFT WITH BETTER RELIABILITY SENSITIVITY, AND ADDITIONAL AGENT DETECTION CAPABILITY. THE CURRENT REPORTING AND WARNING SYSTEM IS LIMITED TO MANUAL SYSTEMS WITH NO INTEGRATION INTO C3I SYSTEMS AND LIMITED BATTLEFIELD AWARENESS SOFTWARE FOR INCIDENT DISPLAY. AN AGGRESSIVE AND INNOVATIVE PROGRAM TO PROVIDE NEEDED DIGITIZED & AUTOMATED WARNING AND REPORTING CAPABILITIES IS IN PLACE. INDIVIDUAL PROTECTION PLACES HEAVY HEAT AND MOBILITY BURDENS ON THE WARFIGHTER AND CURRENT SUITS ARE AT THE LIMIT OF SHELF LIFE. OUR CURRENT PROGRAM WILL FIELD SUITS WITH IMPROVED COMFORT AND PROTECTION, AND IMPROVED MASKS COMPATIBLE WITH WEAPONS SYSTEMS OPTICAL AND COMMO SYSTEMS. THERE ARE LIMITED NUMBERS OF COLLECTIVE PROTECTIVE SHELTERS. CURRENT COLLECTIVE PROTECTION SYSTEMS ARE BASED ON OUTDATED TECHNOLOGY, WITH HEAVY LOGISTICS BURDENS. TECHNOLOGY IS ADDRESSING NEEDED IMPROVEMENTS IN COLLECTIVE PROTECTION WITH REDUCED LOGISTICAL BURDENS. MEDICAL COUNTERMEASURES FOR BOTH CHEMICAL AND BIOLOGICAL THREAT AGENTS ARE LIMITED; WE CURRENTLY HAVE A LIMITED VACCINE

PRODUCTION CAPABILITY. VACCINES ARE THE MOST EFFECTIVE AND LEAST COSTLY PROTECTION FROM BW AGENTS. OUR FY97 BUDGET REQUEST RESPONDS TO THESE DOCUMENTED DEFICIENCIES AND CINC REQUIREMENTS.

CB DEFENSE MISSION AREA MODERNIZATION STRATEGIES

CONTAMINATION AVOIDANCE MODERNIZATION STRATEGY: (VISUALIZATION)

THE INCREASED LETHALITY AND HEIGHTENED OPERATIONAL TEMPO OF THE FUTURE BATTLEFIELD DEMAND RESPONSIVE NBC DETECTION AND WARNING CAPABILITIES TO REDUCE FORCE DEGRADATION CAUSED BY CONTAMINATION. THESE CAPABILITIES, WHICH ALSO ENCOMPASS NBC RECONNAISSANCE, IDENTIFICATION AND REPORTING, HAVE THE STRONGEST URGENCY FOR FORCE READINESS AND WILL CONTINUE TO BE EMPHASIZED BY THE DOD COMMUNITY IN THE NEAR AND DISTANT FUTURE.

EARLY DETECTION AND WARNING IS THE KEY TO AVOIDING NBC CONTAMINATION. AS A RESULT, DOD IS CONCENTRATING CB DEFENSE RESEARCH, DEVELOPMENT AND ACQUISITION (RDA) EFFORTS ON PROVIDING ITS WARFIGHTERS REAL-TIME CAPABILITIES TO DETECT, IDENTIFY, LOCATE, AND WARN AGAINST ALL CB WARFARE THREATS BELOW INCAPACITATING EFFECTS LEVELS. CURRENT EMPHASIS IS ON MULTI-AGENT SENSORS FOR BIOLOGICAL AGENT DETECTION AND OR STAND-OFF/REMOTE/EARLY WARNING DETECTION OF CHEMICAL AND BIOLOGICAL AGENTS. TO MEET THE NEEDS OF THE NEXT THREE TO FIVE YEARS, STAND-ALONE DETECTORS AND SENSORS ARE BEING DEVELOPED FOR A NUMBER OF APPLICATIONS. AS DETECTION TECHNOLOGY MATURES, DEVELOPMENT EFFORTS WILL FOCUS ON SYSTEM MINIATURIZATION AND IMPROVED SENSITIVITY, RANGE IMPROVEMENTS, AND REDUCED FALSE ALARM RATES. THIS FOCUS WILL INTEGRATE CB DETECTION INTO PERSONAL WARFIGHTER GEAR (CHEMICAL DETECTORS ONLY) AND ONTO VARIOUS AIR, SEA, AND GROUND PLATFORMS, AND WILL PERMIT CB WARNINGS AND MESSAGES TO BE TRANSMITTED TO COMMANDERS THROUGHOUT THE THEATER VIA AUTOMATIC DIGITAL COMMUNICATION SYSTEMS.

THE DETECTION AND WARNING PROGRAM AREA FACES A NUMBER OF TECHNICAL AND MANAGEMENT CHALLENGES. FOREMOST OF WHICH IS DETECTION AND IDENTIFICATION OF BIOLOGICAL AGENTS. IT ENCOMPASSES THE DEVELOPMENT OF TECHNOLOGIES FOR REMOTE SENSING, IMPROVED AGENT DISCRIMINATION FROM BACKGROUND, AND SAMPLING EFFICIENCY.

THE MANAGEMENT CHALLENGE INVOLVES THE COORDINATION AND CONSOLIDATION OF FORTY-FOUR DETECTION AND WARNING RDA EFFORTS ACROSS THE SERVICES. JOINT SERVICE INITIATIVES RESULTED IN A NUMBER OF RDA EFFORTS WHICH SHARED COMMON TECHNICAL GOALS, BUT WERE CONSTRAINED TO SERVICE UNIQUE REQUIREMENTS. RECENT MANAGEMENT ORGANIZATIONS AND INITIATIVES, SUCH AS THE JOINT PROGRAM OFFICE FOR BIOLOGICAL DEFENSE (JPO-BD) AND THE JOINT NBC DEFENSE BOARD ARE BUILDING JOINT SERVICE COORDINATION ACROSS THE MISSION AREA. AS A RESULT WE HAVE REDUCED DETECTION EFFORTS TO 9 SOLID REQUIREMENT BASED PROGRAMS.

OVER THE PAST THREE YEARS, JPO-BD HAS COORDINATED THE DEVELOPMENT OF TWO KEY PROJECTS, A BIOLOGICAL STAND-OFF DETECTOR AND JOINT BIOLOGICAL POINT DETECTION SYSTEM TO SATISFY SERVICES' BIOLOGICAL DEFENSE NEEDS. THE REQUIREMENTS FOR THE JOINT BIOLOGICAL POINT DETECTION SYSTEM WERE DEVELOPED BY A JOINT SERVICE WORKING GROUP, AND RESPONSIBILITIES FOR PROJECT EXECUTION HAVE BEEN CLEARLY DEFINED BY THE FOUR SERVICES TO MAXIMIZE THEIR RDA/RDTE EFFECTIVENESS AND TO AVOID DUPLICATION OF EFFORT. IN THE LAST YEAR, THE JSMG TRANSFORMED AND CONSOLIDATED FORTY-FOUR SEPARATE DETECTION AND WARNING REQUIREMENTS INTO NINE FULLY COORDINATED JOINT PROJECTS. REQUIREMENTS, NOMENCLATURE, AND PROGRAM PLANS FOR THESE PROJECTS ARE MATURING AND WILL BE COMPLETE BY FY98. THE JOINT PROGRAMS ARE:

- AUTOMATIC CHEMICAL AGENT DETECTOR ALARM/AUTOMATIC VAPOR AGENT DETECTOR (ACADA/AVAD)
- JOINT SERVICE CHEMICAL MINIATURE AGENT DETECTOR (JSCMAD)
- JOINT SERVICE LIGHTWEIGHT STANDOFF CHEMICAL AGENT DETECTOR (JSLSCAD)
- JOINT SERVICE CHEMICAL WARNING AND IDENTIFICATION LIDAR DETECTOR (JSCWILD)
- JOINT BIOLOGICAL POINT DETECTION SYSTEM (JBPDs)
- JOINT BIOLOGICAL REMOTE EARLY WARNING SYSTEM (JBREWS)
- JOINT SERVICE RECONNAISSANCE SYSTEM (JNBCRS)
- JOINT WARNING AND REPORTING NETWORK (JWARN)
- JOINT SERVICE AGENT WATER MONITOR (JSAWM)

WITHIN THE NUCLEAR RADIATION DETECTION AREA, WE ARE CURRENTLY FIELDING IMPROVED SYSTEMS WHICH REPLACE 30-40 YEAR OLD TECHNOLOGIES. THE AN/VDR-2 RADIACT METER IS A DIGITAL, AUTO-RANGING DOSE-RATE METER WHICH REPLACES THREE OLDER SYSTEMS. IN ADDITION, FY97 IS THE SECOND YEAR OF A MULTI-YEAR PROCUREMENT FOR THE AN/UDR-13, POCKET RADIACT WHICH PROVIDES THE FIRST EVER CAPABILITY TO BOTH DETECT AND

INDICATE PROMPT AND RESIDUAL RADIATION DOSES RECEIVED BY OUR FORCES. CURRENTLY OUR RADIAC IMPROVEMENT PROGRAM HAS NO RESEARCH AND DEVELOPMENT FUNDS, DUE TO BUDGET CONSTRAINTS AND USER PRIORITIES. WE ARE IN THE PROCESS OF RE-EVALUATING OUR FAR TERM NEEDS FOR REMOTE (EARLY WARNING), POSSIBLY AIRBORNE, NUCLEAR CONTAMINATION DETECTION SYSTEMS.

FORCE PROTECTION MODERNIZATION STRATEGY:

FORCES CANNOT ALWAYS AVOID NBC HAZARDS, THEREFORE INDIVIDUAL WARFIGHTING UNITS MUST BE PROVIDED MATERIEL TO PROTECT THEM FROM THE EFFECTS OF THESE LETHAL AGENTS. PROTECTION MUST BE EFFECTIVE AGAINST ALL KNOWN THREATS AND NOT MEASURABLY DEGRADE THE PERFORMANCE OF PERSONNEL, WEAPONS, OR EQUIPMENT. TOTAL NBC PROTECTIVE MEASURES, WHICH CONSIST OF INDIVIDUAL AND COLLECTIVE PROTECTION, ALLOW OUR FORCES TO MAINTAIN OPERATIONAL TEMPO IN A CONTAMINATED ENVIRONMENT.

THE GOAL OF THE PROTECTION RDA AREA IS TO PROVIDE EQUIPMENT WHICH ALLOWS US FORCES TO OPERATE IN A CONTAMINATED NBC ENVIRONMENT WITH MINIMAL DEGRADATION OF THE WARFIGHTERS' PERFORMANCE. THE CURRENT PROGRAM EFFORTS ARE AIMED AT MAINTAINING CURRENT PROTECTION LEVELS WHILE REDUCING PHYSIOLOGICAL AND LOGISTICAL BURDENS.

INDIVIDUAL PROTECTIVE EQUIPMENT (IPE) CONSISTS OF EYE/RESPIRATORY AND SKIN PROTECTION, A MASK WITH HOOD AND PROTECTIVE GARMENTS, BOOTS, AND GLOVES. THE IPE ISSUED TO US FORCES PROTECTS AGAINST ALL KNOWN THREAT CHEMICAL AND BIOLOGICAL AGENTS. ITS CAPABILITIES AGAINST CHEMICAL AGENTS ARE ROUTINELY DEMONSTRATED WITH ACTUAL AGENTS IN THE CHEMICAL DEFENSE TRAINING FACILITY (CDTF), US ARMY CHEMICAL SCHOOL, FT. MCCLELLAN, ALABAMA.

PROTECTIVE MASKS WILL BE IMPROVED TO PROVIDE GREATER USER COMFORT AND TO REDUCE THE BREATHING RESISTANCE CURRENTLY ENCOUNTERED. MASK SYSTEMS WILL REQUIRE INCREASED NBC SURVIVABILITY AND COMPATIBILITY WITH COMBAT WEAPONS SYSTEMS OPTICS OR PERSONAL EQUIPMENT. FUTURE RESPIRATORY SYSTEMS, SUCH AS IMPROVED AIR FORCE AND ARMY AIRCRAFT MASKS, WILL REQUIRE ENHANCED COMPATIBILITY WITH BOTH LIFE SUPPORT AND TACTICAL SYSTEMS ON FIXED AND ROTARY WING AIRCRAFT. WE ARE ALSO EXAMINING THE CONCEPT OF A FIELD EXPEDIENT MASK FOR BIOLOGICAL AGENTS. IN THE FUTURE, THE FOCUS WILL BE ON

INTEGRATED RESPIRATORY PROTECTIVE ENSEMBLES WHICH OFFER OPTIMAL COMPATIBILITY WITH PERSONAL, TACTICAL AND CREW SUPPORT SYSTEMS.

FUTURE PROTECTIVE CLOTHING ENSEMBLES WILL BE REQUIRED FOR LAND, SEA, AIR, AND MARINE FORCES TO ACHIEVE REDUCTIONS IN BULK AND WEIGHT WITH MINIMUM LOSS OF PROTECTION OR DURABILITY. TO SATISFY THESE NEEDS, THE FOUR SERVICES HAVE CONSOLIDATED THEIR MISSION SPECIFIC REQUIREMENTS INTO A FIRST TRULY JOINT EVALUATION PROGRAM FOR THE NEXT GENERATION CHEMICAL PROTECTIVE GARMENTS--THE JOINT SERVICE LIGHTWEIGHT INTEGRATED SUIT TECHNOLOGY (JSLIST) PROGRAM. NEW ACCESSORIES, SUCH AS GLOVES AND FOOTWEAR, ARE ALSO REQUIRED TO EXECUTE MISSIONS AND TASKS WHICH REQUIRE GREATER TACTILITY AND TRACTION. SIMILARLY, CLOTHING SYSTEMS FOR EXPLOSIVE ORDNANCE DISPOSAL (EOD) PERSONNEL ARE REQUIRED TO ENHANCE EXISTING COOLING AND CHEMICAL PROTECTION SYSTEMS WITHOUT UNDUE PHYSIOLOGICAL BURDENS.

COLLECTIVE PROTECTION EQUIPMENT (CPE) DEVELOPMENT EFFORTS ARE FOCUSED ON NBC PROTECTION SYSTEMS AT THE CREW, UNIT, SHIP, AND AIRCRAFT LEVEL WHICH ARE SMALLER, LIGHTER, LESS COSTLY AND MORE EASILY SUPPORTED LOGISTICALLY. NEW SYSTEMS ARE REQUIRED TO MAKE "CLEAN" ENVIRONMENTS MORE AVAILABLE FOR CRITICAL OPERATIONS (I.E., WHERE IPE OTHERWISE PLACES AN UNACCEPTABLE BURDEN UPON THE SERVICE MEMBER IN PERFORMING DUTIES) AND FOR ESSENTIAL REST AND RELIEF. MODERNIZATION CONCENTRATES ON: (1) IMPROVED AIR FILTRATION METHODOLOGIES, (2) ADVANCED TECHNOLOGIES INTEGRATED INTO POWER AND VENTILATION FOR SYSTEMS THAT OFFER A SIGNIFICANT IMPROVEMENT IN LOGISTICS, (3) APPLICATIONS ON ESSENTIAL VEHICLES, VANS AND SHELTERS (4) IMPROVEMENTS TO CURRENT SHIPBOARD FILTERS TO EXTEND FILTER LIFE, AND (5) BENEFIT APPLICATIONS ON ESSENTIAL SPACES ON NAVY SHIPS. EFFORTS ARE IN PLACE TO SUPPORT MAJOR WEAPONS SYSTEMS DEVELOPMENTS SUCH AS THE V-22 OSPREY, THE COMANCHE, AND ARMORED SYSTEMS MODERNIZATION.

CB DEFENSE MEDICAL SUPPORT MODERNIZATION STRATEGY:

DOD MAINTAINS A ROBUST MEDICAL RESEARCH AND DEVELOPMENT PROGRAM FOR CB DEFENSE. THIS PROGRAM HAS RESULTED IN THE FIELDING OF NUMEROUS PRODUCTS TO PROTECT AND TREAT SERVICE MEMBERS. THE DOD PROGRAM TO STOCKPILE BIOLOGICAL DEFENSE COUNTERMEASURES, HAS BEEN SMALLER THAN THE CHEMICAL DEFENSE

EFFORT, BUT HAS RECEIVED GREATER EMPHASIS AND FUNDING IN THE PAST TWO YEARS.

SPECIFIC INITIATIVES PROGRAMMED TO IMPROVE NBC MEDICAL READINESS INCLUDE:

- CONTINUED EMPHASIS ON NBC MEDICAL COUNTERMEASURES RESEARCH
- A BIOLOGICAL DEFENSE IMMUNIZATION IMPLEMENTATION PLAN
- ESTABLISHMENT OF A VACCINE PRODUCTION CAPABILITY
- MEDICAL COLLECTIVE PROTECTION
- ENHANCED MEDICAL DIAGNOSIS OF EXPOSURE TO AGENTS

CHEMICAL WARFARE AGENTS INCLUDE VESICANTS, NERVE, BLOOD AND RESPIRATORY AGENTS, WHILE BIOLOGICAL AGENTS INCLUDE BACTERIA, VIRUSES, RICKETTSIA, TOXINS, AND PHYSIOLOGICALLY ACTIVE COMPOUNDS.

THE CLASSICAL CHEMICAL THREAT CATEGORIES INCLUDE: BLISTER/VESICANT AGENTS (E.G., DISTILLED MUSTARD [HD] AND LEWISITE), NERVE AGENTS (E.G., SOMAN [GD], VX), BLOOD AGENTS (E.G., CYANIDE), AND CHOKING AGENTS (E.G., PHOSGENE). THE THREATS, HOWEVER, ARE NOT RESTRICTED TO COMMONLY ACCEPTED CLASSICAL AGENTS. NOVEL AGENTS MAY BE DEVELOPED BY POTENTIAL ADVERSARIES. ADDITIONALLY, CURRENT THREATS INCLUDE THE POSSIBILITY OF THE USE OF COMBINATIONS OF CHEMICAL AGENTS, OR BIOLOGICAL AGENTS. THE ABILITY TO PROVIDE TIMELY AND EFFECTIVE MEDICAL COUNTERMEASURES TO NEW THREATS DEPENDS UPON MAINTAINING A HIGH LEVEL OF TECHNOLOGICAL CAPABILITY.

THE COUNTERMEASURES FOR CHEMICAL AGENTS INCLUDE PHARMACEUTICALS, MEDICAL EQUIPMENT, SPECIALIZED MATERIEL OR MEDICAL PROCEDURES, AND CONCEPTS FOR TRAINING, DOCTRINE, AND ORGANIZATION. MEDICAL COUNTERMEASURES ARE DESIGNED NOT ONLY TO PREVENT LETHALITY, BUT TO PRESERVE AND SUSTAIN COMBAT EFFECTIVENESS IN THE FACE OF COMBINED THREATS FROM CHEMICAL AND CONVENTIONAL MUNITIONS ON THE INTEGRATED BATTLEFIELD BY:

- PREVENTION OF THE EFFECTS OF CHEMICAL AGENTS (E.G., PRETREATMENTS, PROPHYLAXIS, TOPICAL PROTECTANTS);
- FAR-FORWARD TREATMENT UPON EXPOSURE TO CHEMICAL WARFARE THREATS (E.G. ANTIDOTES),
- CHEMICAL CASUALTY CARE (E.G., DIAGNOSIS, THERAPY AND MANAGEMENT).

IN ACCOMPLISHING THE GOALS OF THE MEDICAL BIOLOGICAL DEFENSE RESEARCH PROGRAM, EFFORTS ARE FOCUSED ON THREE OBJECTIVES:

- PREVENT CASUALTIES WITH MEDICAL COUNTERMEASURES (THROUGH THE USE OF VACCINES, DRUGS, AND OTHER MEDICAL TREATMENTS);
- DIAGNOSE DISEASE (THROUGH THE USE OF FORWARD DEPLOYABLE DIAGNOSTIC KITS AND CONFIRMATION ASSAYS); AND
- TREAT CASUALTIES TO PREVENT DEATH AND MAXIMIZE RETURN TO DUTY (THROUGH THE USE OF ANTITOXINS DRUGS, AND OTHER MEDICAL TREATMENTS).

A BIOLOGICAL THREAT AGENT IS DEFINED AS A LIVING MICRO-ORGANISM OR TOXIN OF BIOLOGICAL ORIGIN THAT CAUSES DISEASE OR DEATH IN HUMANS AND IS INTENTIONALLY DISSEMINATED. PRINCIPAL THREATS INCLUDE PROTEIN TOXINS, BACTERIAL AGENTS, VIRAL AGENTS, AND NEUROACTIVE COMPOUNDS. THE EASE AND LOW COST OF PRODUCING A BIOLOGICAL AGENT; THE DIFFICULTY IN DETECTING ITS PRESENCE AND PROTECTING (AND TREATING) ITS INTENDED VICTIMS; AND THE POTENTIAL TO SELECTIVELY TARGET HUMANS, ANIMALS, OR PLANTS CONSPIRE TO MAKE DEFENSE AGAINST THIS CLASS OF WEAPON PARTICULARLY DIFFICULT. BIOLOGICAL AGENTS CAN PRODUCE CASUALTIES OVER THOUSANDS OF SQUARE KILOMETERS. POUND FOR POUND BIOLOGICALS ARE ORDERS OF MAGNITUDE MORE DEADLY THAN CHEMICALS.

CRITICAL ELEMENTS OF MEDICAL BIOLOGICAL DEFENSE INCLUDE THE ABILITY TO RAPIDLY IDENTIFY AN AGENT AND THE ABILITY TO PROVIDE PROPHYLACTIC AND/OR THERAPEUTIC PROTECTION FROM THE AGENT. OFTEN, THE MOST EFFECTIVE COUNTERMEASURE IS PRE-DEPLOYMENT ACTIVE IMMUNIZATION.

THE CURRENT PROGRAM INCLUDES THE FOLLOWING RESEARCH AREAS FOR THE DEVELOPMENT OF MEDICAL BIOLOGICAL AGENT COUNTERMEASURES:

- CHARACTERIZE MOLECULAR BIOLOGY AND PHYSIOLOGY OF BIOLOGICAL THREAT AGENTS;
- INVESTIGATE THE PATHOGENESIS AND IMMUNOLOGY OF THE DISEASE;
- DETERMINE THE MECHANISM OF ACTION OF THE THREAT AGENT THROUGH MODELING;

- IDENTIFY NEW MEDICAL BIOLOGICAL DEFENSE PRODUCTS BY UNDERSTANDING THEIR INTERACTION WITH AND MECHANISMS OF ACTION AGAINST BIO WARFARE AGENTS
- ESTABLISH SAFETY AND EFFICACY DATA NEW MEDICAL BIO DEFENSE PRODUCTS
- ESTABLISH THE VALIDITY OF NEW MEDICAL BIO DEFENSE PRODUCTS AGAINST BATTLEFIELD USE.

WE HAVE MADE SIGNIFICANT PROGRESS WITHIN THE AREA OF BW VACCINE POLICY AND DEVELOPMENT. THE DEPARTMENT HAS ESTABLISHED THE POLICY, RESPONSIBILITIES, AND PROCEDURES FOR STOCKPILING BIOLOGICAL AGENT VACCINES AND DETERMINED WHICH PERSONNEL SHOULD BE IMMUNIZED AND WHEN THE VACCINES SHOULD BE ADMINISTERED. WE HAVE ALSO IDENTIFIED WHICH BIOLOGICAL AGENTS CONSTITUTE CRITICAL THREATS, AND DETERMINED THE AMOUNT OF VACCINE THAT SHOULD BE STOCKED FOR EACH. WE ARE CURRENTLY WORKING HARD TO PUBLISH AN APPROVED IMPLEMENTATION PLAN FOR THE ESTABLISHED IMMUNIZATION POLICY. WE PLAN TO AWARD A PRIME CONTRACT DURING 1996 TO MANAGE ADVANCED DEVELOPMENT OF BIO DEFENSE PRODUCTS, OBTAIN FDA LICENSES AND PRODUCE VACCINES USING OUR US PHAMACEUTICAL INDUSTRIAL BASE. THE PRIME CONTRACT APPROACH HAS THE ADVANTAGE OF FLEXIBILITY BY ALLOWING THE MARKET PLACE TO DRIVE HOW AND WHERE THE DOD REQUIREMENT WILL BE SATISFIED. WE CURRENTLY HAVE R&D EFFORTS UNDERWAY TO DEVELOP VACCINES AGAINST ALL VALIDATED THREAT AGENTS.

DECONTAMINATION MODERNIZATION STRATEGY: (RESTORE COMBAT POWER)

DECONTAMINATION SYSTEMS PROVIDE A FORCE RESTORATION CAPABILITY FOR UNITS THAT BECOME CONTAMINATED. EXISTING CAPABILITIES RELY UPON THE PHYSICAL APPLICATION AND RINSE DOWN OF DECONTAMINANTS ON CONTAMINATED SURFACES. EXISTING SYSTEMS ARE EFFECTIVE AGAINST A WIDE VARIETY OF THREAT AGENTS, YET ARE SLOW AND LABOR INTENSIVE, AND PRESENT LOGISTICAL, ENVIRONMENTAL, AND SAFETY BURDENS AND CANNOT BE USED ON SENSITIVE ELECTRONIC EQUIPMENT. TO IMPROVE CAPABILITIES IN THIS FUNCTIONAL AREA, THE JOINT SERVICES PLACE EMPHASIS UPON NEW DECONTAMINATING TECHNOLOGIES AND MATERIEL WHICH REDUCE EXISTING MANPOWER AND LOGISTICS REQUIREMENTS. THEY ARE SAFER TO THE ENVIRONMENT, THE WARFIGHTER, AND EQUIPMENT.

THE GOAL OF THE NBC DECONTAMINATION PROGRAM AREA IS TO PROVIDE TECHNOLOGY WHICH REMOVES AND DETOXIFIES CONTAMINATED MATERIAL WITHOUT DAMAGING COMBAT EQUIPMENT, PERSONNEL, OR THE ENVIRONMENT. RESEARCH AND DEVELOPMENT OF NON-CORROSIVE, ALL-AGENT MULTIPURPOSE DECONTAMINANTS AND DECONTAMINATING SYSTEMS FOR COMBAT EQUIPMENT, CARGO AIRCRAFT AND SHIPS, PERSONAL GEAR, AND SKIN REMAINS A PRIORITY. ALTERNATIVE TECHNOLOGIES, SUCH AS SENSITIVE EQUIPMENT DECONTAMINATION METHODS AND LARGE SCALE AUTOMATED DECONTAMINATION SYSTEMS, AND CATALYTIC COATINGS AND SORBENTS, ATTRACT STRONG INTEREST ACROSS THE FOUR SERVICES. LARGE AREA DECON SYSTEMS ARE NEEDED TO SUPPORT OUR POWER PROJECTION STRATEGY. DEPLOYING FORCES MAY LAND AT FORWARD DEPLOYED AIRPORTS OR SEAPORTS WHICH MAY BE TARGETED FOR CONTAMINATION.

NBC INDUSTRIAL BASE

TWO YEARS AGO, WE PUBLISHED THE RESULTS OF OUR FIRST-EVER JOINT SERVICE INDUSTRIAL BASE ASSESSMENT OF THE NBC DEFENSE SECTOR. AMONG OTHER THINGS, THIS REPORT, ENTITLED "NUCLEAR, BIOLOGICAL AND CHEMICAL DEFENSE SECTOR STUDY: A JOINT SERVICE INDUSTRIAL BASE ASSESSMENT" CONCLUDED THAT THE SECTOR IS PRIMARILY SUPPORTED BY SMALL TO MEDIUM SIZED HIGHLY SPECIALIZED COMPANIES OFTEN DEDICATED TO PRODUCING MILITARY UNIQUE PRODUCTS WITH LITTLE OR NO COMMERCIAL UTILITY.

IN THIS REGARD, THE VARIOUS COMPANIES ARE NOT UNLIKE MANY OTHERS CURRENTLY DOING BUSINESS WITH THE DEPARTMENT OF DEFENSE TODAY -- AND THEREIN LIES THE PROBLEM: UNFORTUNATELY, SOME OF THESE COMPANIES HAVE BECOME ALMOST SOLELY DEPENDENT ON THE MILITARY MARKET FOR THEIR FINANCIAL WELL-BEING. ON THE OTHER HAND, OTHER MORE SUCCESSFUL COMPANIES HAVE DIVERSIFIED INTO COMMERCIAL MARKETS TO BUFFER THE RISE AND FALL OF MILITARY NEEDS, AND HAVE BECOME MORE COMPETITIVE. IT IS THE LATTER GROUP THAT WILL ULTIMATELY BE SUCCESSFUL IN THE MARKET PLACE. IT IS OUR SINCERE HOPE THAT ALL OF OUR SUPPLIERS WILL TAKE ADVANTAGE OF NEW MANUFACTURING TECHNIQUES AND COMMERCIAL PRODUCTS AND PROCESSES WHICH WILL PERMIT THEIR ENTRY INTO ROBUST COMMERCIAL MARKETS WHILE AT THE SAME TIME MAINTAINING THEIR CAPABILITY TO PRODUCE EQUIPMENT FOR THE DEPARTMENT OF DEFENSE.

THE INDUSTRIAL INFRASTRUCTURE FOR SOME ITEMS DESIGNATED AS CRITICAL TO COMBAT OPERATIONS (I.E., CB PROTECTIVE SUITS,

CHEMICAL GLOVES, AND NERVE AGENT AUTOINJECTORS), IS BEING CAREFULLY MONITORED BECAUSE OF LOW PEACETIME DEMAND, CRITICAL STOCK LEVELS, AND POTENTIALLY HIGH WARTIME USE. ALMOST TWO YEARS AGO, WE PUBLISHED AN ACTION PLAN TO CORRECT PROBLEMS IDENTIFIED IN THE JOINT SERVICE REPORT. THE IMPLEMENTATION OF THIS ACTION PLAN IS ON-GOING. THE JOINT SERVICE MATERIEL GROUP IS CURRENTLY CONDUCTING AN UPDATE TO THE NBC DEFENSE SECTOR STUDY. THIS UPDATE IS SCHEDULED TO BE COMPLETED THIS YEAR.

SUMMARY

SINCE OPERATION DESERT STORM IDENTIFIED DEFICIENCIES WERE DETAILED IN THE CONDUCT OF THE PERSIAN GULF WAR, FINAL REPORT TO CONGRESS (PUBLIC LAW 102-25), SIGNIFICANT PROGRESS HAS BEEN MADE WITHIN THE CB DEFENSE READINESS AREA. IMPROVEMENTS CONTINUE TO BE AND WILL BE FIELDDED WITHIN THE NEAR TERM. THE CURRENT DEVELOPMENTAL PROGRAM IS FOCUSING ON A JOINTLY INTEGRATED, BALANCED APPROACH TO OBTAINING NEEDED CAPABILITIES FOR OUR FORCES WITHIN AFFORDABILITY CONSTRAINTS. ALTHOUGH PROGRESS HAS BEEN MADE, SERIOUS CHALLENGES REMAIN WITH BOTH CB DEFENSE TECHNOLOGY APPROACHES, AND WITH BUDGET CONSTRAINTS. WE ARE CONTINUALLY ANALYZING PRIORITIES AND RESOURCES REQUIRED TO EXECUTE AN EFFECTIVE PROGRAM. OUR PROGRAMS, JUST AS THE MYRIAD OF OTHER IMPORTANT PROGRAMS WILL CONTINUE TO COMPETE FOR SCARCE RESOURCES IN A CONSTRAINED BUDGET ENVIRONMENT. OUR EMPHASIS ON JOINTNESS AND EFFORTS TO ELIMINATE DUPLICATION OF EFFORTS WILL RESULT IN ACHIEVING THE MOST EFFECTIVE USE OF LIMITED RESOURCES.

IN SUMMATION, THE DOD CB DEFENSE PROGRAM IS RESPONDING TO THE THREAT - REQUIREMENTS - PROGRAMS PROCESS. PROGRAMS ARE IN PLACE TO RESPOND TO USER NEEDS AND SHORTFALLS. OVERSIGHT AND MANAGEMENT OF THE DOD CB DEFENSE PROGRAM CONTINUE TO IMPROVE. SIGNIFICANT PROGRESS HAS BEEN MADE IN IMPLEMENTATION OF MANAGEMENT INITIATIVES REQUIRED. WE ARE ON THE RIGHT AZIMUTH FOR PROGRESS IN FIELDING NEEDED IMPROVED CB DEFENSE EQUIPMENT TO OUR FORCES. THE CONTINUED SUPPORT OF CONGRESS AND IMPLEMENTATION OF CURRENT PLANS WILL CONTINUE TO IMPROVE COOPERATION AND IMPROVE READINESS.

**STATEMENT OF MAJ. GEN. GEORGE E. FRIEL, COMMANDER,
U.S. ARMY CHEMICAL AND BIOLOGICAL DEFENSE COMMAND**

General FRIEL. Good afternoon, Mr. Chairman, members of the committee. Like Dr. Prociv, Mr. Chairman, I would like to ask that my written statement be recorded for the record.

Mr. WELDON. So ordered.

General FRIEL. And with your concurrence, sir, I would also like to make some opening statements.

First of all, I would like to thank you for allowing me to come and discuss the Chemical and Biological Defense Program for DOD. I am here today as an Army commander representing those who are developing the materiel that will be used to protect our forces and second as the chairman of the Joint Services Materiel Group to discuss some of the processes that we have for managing those joint programs and finally to talk about the thrust of those programs.

The CB threat we face today is much broader and much more uncertain in both of the major regional conflicts that we may be involved in. The dynamics of that threat and the evolving joint war-fighting strategies of all four services define three essential chemical and biological capabilities that are required: We must provide all commanders on the battlefield real-time situational awareness and early warning to all of those who may be threatened; second, we must be able to protect personnel in essential facilities from those attacks; and finally, quickly recover and maintain the operational tempo required of much smaller power projection forces.

Our joint modernization strategies, however, I believe, focus our current Chemical and Biological Defense Program as a system and provide these essential capabilities to warn, protect, and recover from chemical and biological attacks. I would like to highlight our current efforts on those programs. We will be able to field in 1997 a joint chemical agent detector which is finally multiple-agent and programmable and will link with the digitized networking capabilities of our command and control systems. We have successfully tested a lightweight standoff chemical agent detector to provide for the first time, standoff chemical agent detection.

We are developing a joint biological point detection system, which will double the number of identifiable agents of the current system and a joint biological remote early warning system with biological standoff early warning out to 5 kilometers. We are developing a joint warning and reporting system, a network, a digitized network that will fuse all of the chemical and biological detectors into the digitized command and control systems of all four services and provide hazard prediction and early warning at all levels. A joint service lightweight integrated suit technology program—or what we call JLIST—will provide lightweight chemical protective overgarments that both cost less and last longer, and we have developed a lightweight joint modular decontamination system that will be fielded to the total joint force. We are also continuing critical research into technologies that will aid us in providing better standoff biological agent detection, improved, filter technology and new decontamination materials.

After Desert Storm, we in DOD renewed our efforts to improve our NBC defense capabilities. I would like to highlight some of the

recent improvements. We have fielded the M-40 series protective mask to the Army and Marine Corps land forces. The Marine Corps has completed fielding, and the Army's goal is to field our entire total force. We are also fielding a protective mask test system that will enhance the confidence in the protective mask, aid in validating the maintenance at the unit and individual level, and ensure the fit and serviceability of the mask. This system will enhance and measure the readiness of the protective mask in the field.

A block-one upgrade of the Fox reconnaissance system will provide standoff detection capability, digitized networking with the command and control system, organic maintenance, and reduce the crew from four to three. And we have type-classified a new automatic chemical agent detector and are procuring this detector as a joint program. This detector will provide the first point programmable multiagent capability that is networked digitally with the threat warning system. We developed and fielded a biological integrated detection system, or what we refer to as the BIDS, and we will complete fielding of 38 systems this year and field an additional 86 upgraded systems by 1999.

Now, Mr. Chairman, I would like to briefly discuss the status of the joint process established by public law and implemented in the joint service agreement and highlight some of the accomplishments of the past year as examples that the joint process is working. The Joint Service Integration Group is responsible for NBC defense training, doctrine, and requirements development. They will shortly complete a joint service NBC defense modernization plan and a joint service biological detection strategy. They have completed a joint service concept for NBC defense and streamlined the joint operational requirements document process significantly. The Joint Services Materiel Group, which I chair, is responsible for the joint research and development acquisition plan, development of a joint NBC defense equipment logistics plan, and a joint program objective memorandum—or POM—strategy. We have developed the first joint POM strategy, a joint research/development/acquisition plan, recently conducted a joint mass readiness study and completed a joint industrial base study.

In summary, Mr. Chairman, I believe that the NBC defense RDA program is the right focus to provide the essential capabilities for the total joint force. I believe that the joint service agreement provides the right management structure and processes for that program. I would like to thank you for allowing me to testify today and for your continuing support.

[The prepared statement of General Friel follows:]

RECORD STATEMENT BY

MAJOR GENERAL GEORGE E. FRIEL

COMMANDER, U.S. ARMY CHEMICAL AND BIOLOGICAL DEFENSE COMMAND

BEFORE THE

SUBCOMMITTEE ON RESEARCH AND DEVELOPMENT

COMMITTEE ON NATIONAL SECURITY

HOUSE OF REPRESENTATIVES

MARCH 12, 1996

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STATEMENT BY

MAJOR GENERAL GEORGE E. FRIEL

COMMANDER, U.S. ARMY CHEMICAL AND BIOLOGICAL DEFENSE COMMAND

Mr. Chairman and members of the committee:

Thank you for allowing me to come today to discuss the Chemical and Biological (CB) defense program which is of concern and has been well supported by this committee and others in Congress. I am here today as an Army commander responsible for providing the materiel to protect our forces from the CB threat and as the Chairman of the Joint Service Materiel Group to discuss the thrust of our Joint programs and processes that support these programs. The chemical and biological threat is of the utmost concern to the President, the national security community and the DOD senior leadership. This danger is reshaping our national military strategy and has resulted in a counterproliferation strategy that has as a key component, a robust NBC defense capability to deter both development and use of these weapons. If potential enemies know that our troops are well protected, then the use of such agents will be high risk with low payoff. This capability is vital to protect U.S. Forces if deterrence fails and we encounter these weapons on future battlefields.

Implication of the Threat and Joint War Fighting Strategy

The chemical and biological threat we face has changed since the 1980s. The CB threat we face today is much broader and much more uncertain. Many potential enemies could possess CB warfare agents and the weapons to deliver them anywhere in the theater of operations. U.S. Forces must be prepared to face in both Major Regional Conflicts (MRC) theaters the full array of potential chemical or biological agents, from the older agents like mustard and anthrax, to the new agents like nerve agents and bacterial virus/toxins to novel agents adapted from commercial chemicals or bioengineered agents.

The dynamics of the chemical and biological warfare threat and the joint war fighting strategies of today and tomorrow define the essential chemical and biological defense capabilities. The post cold war joint force will be a global power projection force that will shape and fight the battles of tomorrow using principles such as the Army's Force 21 concept. These concepts will require early entry of deployable, tailored and flexible joint forces that must dominate the battle space while protecting our forces and finding and destroying the enemy using information-based technology. We must fight with a

smaller, qualitatively superior force that will gain and maintain operational tempo that overwhelms and defeats the enemy.

There are two key lessons that must shape our future chemical and biological warfare defense efforts: From the tests in the late 1980s, Combined Arms in a Nuclear and Chemical Event (CANE), we learned that operating in full mission oriented protective posture (MOPP) dramatically degrades mission effectiveness; from Desert Storm, we learned that forces under the threat of CB warfare use will assume this debilitating MOPP posture absent the ability to provide early warning. Thus, early warning is an imperative for maintaining operational tempo and providing force protection in a chemical and biological threat environment.

Future Chemical and Biological Defense Required Capabilities

The first essential element of chemical and biological warfare defense capability is the need to provide commanders at all levels, theater, operational and tactical, real time situational awareness and decision tools to manage the response to chemical and biological warfare attacks. These tools must be imbedded in the evolving information age command and control systems and all weapons platforms. Second, we must be able to protect personnel and essential facilities from the hazards.

Third, we must be able to quickly recover from the effects of the attack and maintain operational tempo. We must be able to do this in a battle space characterized by joint/coalition forces. These essential capabilities shaped the chemical and biological defense programs for the rest of the century and beyond.

Our most important and immediate challenge is to provide early warning of chemical and biological warfare attacks. It is number one on the JCS integrated CINC priority list and our most important chemical and biological warfare defense requirement. The two components of this challenge: are equipment and software coupled with the joint NBC Defense doctrine, procedures and operational concepts necessary for effective early warning. Some of the problems we face in our current capabilities are as follows:

- o Our fielded chemical point detectors can not detect all threat agents and because they are analog based, they require manual or voice transmission of attack warning.
- o The current biological detector also can not detect all potential threat agents and requires undesirable response time to identify the specific agents.
- o We have no biological and limited chemical standoff detection capability to detect, identify the agent, and warn troops before the arrival of the agent cloud.

- o We lack a detector fusion/networking capability to link all detectors on the battlefield into a joint detection system.
- o We lack threat analysis and hazard prediction model fusion and networking to provide global access to threat, hazard and attack warning data.
- o We lack the doctrinal and operational procedures to fuse detection arrays across the battlefield, provide threat analysis of potential attacks, and attack warning to all levels simultaneously, thus avoiding the loss of operational tempo for units not affected by the attack.

Modernization Objectives

Our Chemical and Biological Defense modernization strategy is driven by the threat and shaped by the war fighting strategy of the 21st Century. We are focusing our modernization efforts on providing the essential capabilities--early warning, protection for the force and rapid recovery to maintain operational tempo. The following highlights these R&D programs:

**ENHANCED CAPABILITY TO DETECT, IDENTIFY, LOCATE AND
WARN OF CB ATTACKS**

- o Joint Chemical Agent Detector (JCAD). Automatic stand alone point chemical detectors with multiagent field

reprogrammable and digitized networking capabilities. Combines the Army's Automatic Chemical Agent Detection Alarm (ACADA) and Air Force's Agent Vapor Automatic Detector (AVAD) as a joint program to be fielded starting FY 97.

- o Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD). Provides a standoff chemical agent detector with multiagent field reprogrammable, digitized networking capability that can be mounted on multiple weapon platforms to be fielded in FY 01.

- o Joint Biological Point Detection Systems (JBPD). Automated point biological detection and identification capability with double the number of agents detectable as that of the Biological Integrated Detection System, a faster response time and reduced operator burden.

- o Joint Biological Remote Early Warning System (JBREWS). Standoff biological detection capability out to 5KM. This will provide a standoff biological detection capability.

- o Joint Services NBC Reconnaissance System (JNBCRS). Provides enhancement of current Fox system with standoff vapor and liquid chemical agent mapping on the move in both armored and light weight vehicles. Will add biological detection and reconnaissance with the CB Mass Spectrometer.

- o Joint Miniature Chemical Agent Detector (JSMAD). JSMAD combines air, sea and land force requirements. Will provide multichemical agent detection for soldiers, interior of aircraft and ships with digitized networking capability.

- o Joint Warning and Reporting Network (JWARN). Combines both hardware and software to provide a way to fuse both chemical and biological field detector data into a digitized network directly into the command and control systems providing hazard prediction and warning (situational awareness) to commanders at all levels and to all weapons platforms and soldiers in the hazard area.

PROTECT INDIVIDUAL AND CRITICAL FACILITIES AND WEAPON PLATFORMS

- o Joint Respiratory Protection for the 21st Century (RESPO 21). Eye and respiratory protection that is more agent resistant, lighter, provides less breathing resistance and is compatible with vision and optical command and control and siting systems.

- o Joint Service Light Weight Integrated Suit Technology (JSLIST) Programs. Light weight chemical protective garments that cost less and last longer than the current or JLIST I suits.

- o Joint Advanced Collective Integrated Protection Systems (ACIPS). Long life filters, integrated power source and environmental control unit all in one unit. Will be used to

provide collective protection to command and control van and facilities that require a protective environment for mission accomplishment, i.e., medical evacuation.

o Regenerative Filter Systems (RFS). Filters for armored vehicles and shipboard and fixed sites (hospitals, command and control, air base, and logistic base facilities) collective protective systems. May also replace collective protection for shelters used for command and control and medical facilities.

RECOVER FROM EXPOSURE TO CHEMICAL ATTACK--DECONTAMINATION OF EQUIPMENT, AND PORTS, AIRFIELDS AND LARGE LOGISTICS FACILITIES

o Equipment, Area and Fixed Site Decontamination. Enzymatic, environmentally safe and nonaqueous based decontaminates that will replace current caustic and hazardous DS2/STB which cause a large logistical burden.

o Joint Modular Decontamination System (JMDS). A light weight man-portable high or low pressure, high temperature decontamination system that will be deployed throughout the joint force for unit level decontamination and to special decontamination units for multipurpose decontamination operations.

Critical Technology Gaps and Research and Development Challenges

o Standoff Biological Agent Identification Technologies. Current standoff detection technologies provide a high

probability of detecting the presence of biological agents. However, this technology can not identify the specific agent nor confirm absolutely that it is really a threat agent.

- o Alternative Filter Technology. We need new filter technology/materials that provide a longer life than carbon-based filters and or is regenerative. This would allow breakthroughs in protective masks, collective protection and ultimately lead to providing chemical agent protection in normal combat uniforms.

- o New Decontamination Materials. We need alternatives to today's corrosive and water intensive decontaminants that are highly effective yet environmentally acceptable. This will drastically improve our ability to decontaminate and recover from chemical attacks without the logistical burden created today.

WHERE WE ARE TODAY

U.S. Forces received a wake up call during Desert Storm. Critical deficiencies in Biological Defense, Chemical Detection and Warning Capabilities were highlighted during the war. Concern by our senior leadership and Congress about these deficiencies when coupled with a recognition of the increased threat to U.S. Forces posed by the proliferation of chemical and biological weapons provided an impetus for renewed efforts to improve our NBC Defense capabilities.

I have outlined above several Chemical and Biological Defense Research, Development, and Acquisition (RDA) programs that address the critical CB defense shortfalls. However, we are moving ahead and I would like to now highlight some recent improvements in our capability and then discuss the status of the joint process.

NEW OR IMPROVED EQUIPMENT/CAPABILITIES

- o We are fielding the M40 series protective masks to Army and Marine land forces. This mask replaces the M17 Mask used in Desert Storm. It provides much superior protection over any other military mask system. It was recently upgraded to enhance comfort, make it compatible with all U.S. protective clothing, and more reliable when used in armored vehicles. The USMC has completed fielding to their total force. The Army continues to field the M40 series of Mask and is budgeted to field 85 percent of the total requirements with a goal of fielding a modern mask to every soldier.
- o M45 Protective Mask (Aviator). This mask provides the same superior protection as the M40 series and replaces the more expensive M49 pressurized mask. We are currently programmed to field this mask to all Army aviators except the Apache pilots.
- o We are fielding the M41 Protective Assessment Test System (PATS) to meet the total Joint Requirements. This system will

enhance confidence in the protective mask, aid in validating maintenance (PMCS), and assure the fit and serviceability of the mask. This system will enhance and measure readiness of the mask in the field.

- o Chemical Agent Monitor (CAM)/Improved Chemical Agent Monitor (ICAM). The CAM/ICAM provides all units the capability to conduct local area reconnaissance for contaminants, determine which personnel and equipment are contaminated and speeds recovery by verifying decontamination. The ICAM has the same capability as the CAM, but is more reliable and less expensive to buy and operate. We have fielded nearly 10,000 CAMs and are currently buying 3600 ICAMS. We are currently programmed to buy about 1/2 of the total Army requirement.
- o Fox, NBC Reconnaissance System (NBCRS). The Fox upgrade provides organic maintenance, a standoff chemical detection capability, and digitized networking with the hazard warning system. The upgrades will reduce the crew from four to three. We are currently programmed to upgrade 62 for the active heavy divisions and the two Armored Cavalry regiments and our goal is to upgrade the entire fleet of 123 systems.
- o M21 Remote Sensing Chemical Agent Alarm (RSCAL). This chemical standoff detection system is capable of detecting

chemical agents out to 5KM. It is being fielded to the Marines and will be installed in the Fox vehicle.

- o M23 Automatic Chemical Agent Detector. We have type-classified generic the Automatic Chemical Agent Detector Alarm and are procuring the detector as a joint program using an NDI strategy. Shootoff of three final candidates is being conducted now. Two of these candidates are being tested under the Foreign Comparative Test program. This M23 will provide the first point, reprogrammable, multiagent chemical detector that will also be networked digitally with the threat warning system. This detector will be type classified as the Joint Chemical Agent Detector in August 1996. We are currently programmed to buy about 9,000 for the Army and Air Force, representing about one fourth of the requirement over a ten-year buy.

- o Biological Integrated Detection System (BIDS). We developed and fielded the BIDS in just over two years by integrating a number of nondevelopmental items (NDI) into a detection and identification system. The BIDS has been fielded to the Army's first Biological Defense Company and provides the first deployable biological point detection capability for U.S. Forces. We will complete fielding of 38 systems this year and field 86 additional upgraded systems by 1999.

Joint Structure and Management

The joint management structure established by the Joint Service Agreement works. I'm optimistic that we have built a system which will allow us to effectively leverage the strengths of each of the services. Although we were formally chartered just over a year ago, we were working many of the issues and programs jointly through joint panels previously established. I would like to highlight some of the accomplishments of the past year.

- o The Joint Service Integration Group (JSIG) is responsible for Defense training, doctrine and requirements development. Its membership includes the four services, the Joint Program Officer for Biological Defense, a medical representative, and JCS. The JSIG will complete this month a Joint Service NBC Defense Modernization Plan and have completed a Joint Service Concept for NBC Defense. They also coordinated the development of the first Joint Service Biological Detection strategy. The JSIG streamlined the Joint Operational Requirements Document development process which includes coordination with the JCS, JROC, through the Joint War Fighting Capabilities Assessment (JWCA) shortening the process from three years to six months. Several Joint Operational Requirements Documents have been completed or are in the final coordination. The JSIG developed

and validated against the JCS CINC Integrated Priority List a Joint Priority List for NBC Defense programs.

- o The Joint Service Materiel Group (JSMG) is responsible for the Joint RDA Plan, the development of a Joint NBC Defense Equipment Logistic Plan and the Joint Program Objective Memorandum (Budget) strategy. The membership includes the four services, the Surgeon General, Joint Program Office for Biological Defense, JCS and Defense Logistics Agency (DLA). The JSMG has assigned each service responsibility for coordinating and integrating a specific commodity area and assigns lead service responsibility for managing each program. The lead service continues to execute the program through its normal acquisition and logistical structure. The JSMG has developed the first Joint POM Strategy, a Joint RDA Plan, including a Defense Technology Area Plan and extended planning annex. We have established a Joint Modeling and Simulation program and a Joint International Cooperation Research, Development, Technology, and Engineering (RDT&E) program. The JSMG has conducted a Joint Mask Readiness Study and a Joint Industrial Base Study. We provide NBC Survivability guidance to an OSD Defense Acquisition Board Overarching Integrated Product Team (OIPT) for major weapon system decisions.

In summary, I believe the NBC Defense RDA program has the right focus to provide the essential capability for the Joint Force to fight and win in an NBC threat environment. As is all of DOD, we are clearly resource constrained in our ability to provide the essential NBC capabilities to the total force to support two MRCs. I believe the Joint Service Agreement provides the right management structure and process for the Secretary of the Army to execute his responsibility as outlined in the public law. Thank you for allowing me to testify today and for your continuing support.

Mr. WELDON. Thank you, General Friel.
Admiral Fry.

**STATEMENT OF REAR ADM. SCOTT A. FRY, USN, DEPUTY
DIRECTOR, STRATEGY AND POLICY, J-5, JOINT STAFF**

Admiral FRY. Mr. Chairman, thank you for this opportunity to represent the joint staff and discuss our CINCs' perspectives on countering the proliferation of weapons of mass destruction in their regions and their priorities for requirements that will provide the capabilities to fight and win in an NBC environment. I also ask that my written statement be included in the record.

Mr. WELDON. Without objection.

Admiral FRY. And with your permission, I would like to highlight some portions of that statement at this time.

The counterproliferation mission and function study of the Chairman of the Joint Chiefs of Staff, which was completed in May 1995, delineated the situations for which our combatant commanders need to be prepared to respond to weapons of mass destruction with this mission statement: "The Armed Forces of the United States are committed to employ military force to counter the proliferation of weapons of mass destruction, the associated infrastructure, and their delivery systems. Combatant commanders and the commander of the U.S. element of the North American Aerospace Defense Command will be prepared to respond in situations ranging from preventing the proliferation to countering the use or threatened use of weapons of mass destruction as follows: in peacetime, crisis prevention or reduction; deter through supporting diplomacy, arms control, and peacetime employment of weapons, of military resources to influence, train, exercise and demonstrate capability and resolve; during crisis response to conduct operations for mobilization in a full range of offensive and defensive activities; during wartime situations, employ required offensive and defensive forces in response to escalation through imminent or actual use of weapons of mass destruction; and during posthostilities, conduct operations for demobilization, reconstruction capabilities, and resolve consequences resulting from weapons of mass destruction operations."

This mission statement is consistent with the DOD policy that states our military must be prepared to deter the use of weapons of mass destruction, defend against those weapons, and destroy weapons of mass destruction that threaten our interests. The regional CINC's who have the most complete knowledge of their regions have been tasked to execute this difficult mission. The motives of proliferators, the vulnerabilities of their infrastructure and the likely reactions of other hostile states and nonstate actors to us or coalition military operations are all tightly woven into the fabric of regional security. Our CINC's integrate their regional peacetime engagement strategies with their war-planning efforts to deter proliferation. Through interaction with the militaries of their respective regions, the CINC's reinforce deterrence by demonstrating U.S. resolve and opposition to acquisition and production of weapons of mass destruction along with the ability of our forces to respond to the use or threatened use of these weapons.

Mr. Chairman, as you know, the primary task of our Armed Forces is to deter conflict, but should deterrence fail, to fight and win our Nation's wars. To deter effectively, our CINC's must be able to convince an adversary that the risk of proliferation outweighs the gains. Demonstrating the capability to detect and identify the threat early, the capability to protect our forces and allies from weapons of mass destruction's use, and the capability to destroy weapons of mass destruction enhances deterrence. But should deterrence fail, these same capabilities will enhance our forces' ability to operate and prevail in an NBC environment. These capabilities are the basis for the CINC priorities that I submitted in my written testimony.

Thank you, sir.

[The prepared statement of Admiral Fry follows:]

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RESEARCH AND DEVELOPMENT SUBCOMMITTEE

STATEMENT OF RADM SCOTT A. FRY, USN

DEPUTY DIRECTOR, STRATEGY AND POLICY, J-5, JOINT STAFF

BEFORE THE

HOUSE COMMITTEE ON NATIONAL SECURITY

RESEARCH AND DEVELOPMENT SUBCOMMITTEE

MARCH 12, 1996

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HOUSE NATIONAL SECURITY COMMITTEE
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MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE: I AM HONORED TO APPEAR BEFORE YOU THIS AFTERNOON TO PROVIDE AN OVERVIEW OF THE JOINT STAFF AND REGIONAL COMMANDERS IN CHIEF, OUR WARFIGHTING CINCS, APPROACH TO PROTECTING OUR FORCES AGAINST THE USE OF WEAPONS OF MASS DESTRUCTION.

OUR REGIONAL CINCS HAVE BEEN ASSIGNED THE MISSION OF COUNTERING THE PROLIFERATION OF WEAPONS OF MASS DESTRUCTION IN THEIR THEATERS. PROLIFERATION IS A COMPLEX TWO DIMENSIONAL PROCESS INVOLVING BOTH POLITICAL-MILITARY DECISION MAKING AND TECHNOLOGICAL DEVELOPMENT. POSSESSING AN ADEQUATE UNDERSTANDING OF THESE DIMENSIONS IS NECESSARY TO INTERRUPT A PROLIFERANT'S ULTIMATE GOAL OF WEAPONIZING NUCLEAR, BIOLOGICAL, AND/OR CHEMICAL WEAPONS. THE REGIONAL CINC, WITH HIS KNOWLEDGE OF THE POLITICAL AND MILITARY LEADERSHIP AND FAMILIARITY WITH POTENTIAL PROLIFERATION PATHWAYS IN HIS THEATER, IS IN THE BEST POSITION NOT ONLY TO PLAN FOR THE PROTECTION OF HIS FORCES BUT TO LEAD THE EFFORT FROM A MILITARY PERSPECTIVE TO PREVENT PROLIFERATION OF THESE WEAPONS. THE CHAIRMAN'S OVER-ARCHING CONTINGENCY PLAN FOR COUNTERPROLIFERATION, A COMBINED JOINT STAFF, SERVICE, AND CINC EFFORT, IS NEARING COMPLETION. IT WILL PROVIDE THE REGIONAL CINCS WITH THE OPERATIONAL OBJECTIVES AND TASKS THAT WILL GUIDE THE DEVELOPMENT OF THEIR THEATER STRATEGIES AND CONTINGENCY PLANS.

IN ORDER TO FOCUS ACQUISITION PROGRAMS AND PRIORITIZE FUNDING WITH OUR WARFIGHTING CINCS' REQUIREMENTS, FOURTEEN PRIORITIES WERE ESTABLISHED BY THE CINCS AND THE JOINT STAFF. THESE PRIORITIES ARE:

CINC COUNTERPROLIFERATION/PRIORITIES

1. DETECTION & CHARACTERIZATION OF BW & CW AGENTS
2. INTERCEPT CRUISE MISSILES
3. DEFEAT UNDERGROUND TARGETS
4. CHARACTERIZATION & IDENTIFICATION OF UNDERGROUND TARGETS
5. COLLECT & ANALYZE INTEL
6. PASSIVE DEFENSE ENABLING OPERATIONS
7. SUPPORT FOR OPERATIONS IN NBC ENVIRONMENT
8. PRODUCTION OF BW AGENT VACCINE
9. PLANNING AND TARGETING FOR ABOVE-GROUND

INFRASTRUCTURE

10. AGENT DEFEAT
11. DETECT & TRACK SHIPMENTS
12. PROMPT MOBILE TARGET KILL
13. SUPPORT FOR SPECIAL OPERATION FORCES
14. LOCATE, DETECT, & DISARM WEAPONS OF MASS DESTRUCTION IN CONUS & OCONUS

CINC COUNTERPROLIFERATION PRIORITIES DEFINITIONS

1. DETECTION/CHARACTERIZATION OF BW AND CW AGENTS

SAFE & RELIABLE DETECTION, IDENTIFICATION, AND EARLY WARNING OF BW & CW AGENTS.

2. INTERCEPT CRUISE MISSILES

DETECT, ENGAGE, AND DESTROY CRUISE MISSILES USING INTEGRATED SENSOR PLATFORMS AND FIRE CONTROL CAPABILITIES.

3. DEFEAT UNDERGROUND TARGETS

DEVELOP WEAPONS TO STRIKE WMD-RELATED UNDERGROUND FACILITIES AND FUNCTIONS.

4. CHARACTERIZE AND IDENTIFY UNDERGROUND TARGETS

RELIABLY AND PRECISELY IDENTIFY THE LOCATION OF UNDERGROUND NBC FACILITIES, INCLUDING TUNNELS AND ADITS. DETERMINE TYPES OF AGENTS IN THE TARGET IN ORDER TO SELECT THE MOST EFFECTIVE MEANS TO NEUTRALIZE THEM.

5. COLLECT AND ANALYZE INTELLIGENCE

ACQUIRE AND FUSE DATA THAT ENABLES ASSESSMENT OF TARGET VULNERABILITY, PREDICTION OF COLLATERAL EFFECTS FROM A STRIKE, AND VERIFICATION OF TARGET DEFEAT.

6. PASSIVE DEFENSE ENABLING OPERATIONS

DETECTION, IDENTIFICATION, WARNING, PROTECTION,
DECONTAMINATION, AND MEDICAL RESPONSE EFFORTS TO PROTECT
FORCES AGAINST EFFECTS ASSOCIATED WITH THE USE OF WMD.

7. SUPPORT FOR OPERATIONS IN NBC ENVIRONMENT

DEVELOPMENT OF JOINT NBC DOCTRINE, INTEGRATION OF WMD
CONSIDERATIONS INTO WARGAMING AND EXERCISES, AND ANALYSIS &
MODELING OF NBC WEAPONS AND EFFECTS.

8. BIOLOGICAL VACCINES

PRODUCTION OF PROTECTIVE VACCINES AGAINST BIOLOGICAL WARFARE
AGENTS.

9. PLANNING AND TARGETING FOR ABOVE GROUND INFRASTRUCTURE
ADAPT PLANNING AND TARGETING PROCEDURES TO PREDICT AND
ACCOUNT FOR COLLATERAL EFFECTS UNIQUE TO NBC TARGETS.

10. AGENT DEFEAT

RENDER BW & CW AGENTS AND NUCLEAR MATERIALS HARMLESS THROUGH
PHYSICAL DESTRUCTION, NEUTRALIZATION, OR CONTAINMENT.

11. DETECTION AND TRACKING OF SHIPMENTS

ABILITY TO DETECT, CHARACTERIZE AND CONTINUOUSLY TRACK SHIPMENTS OF WMD, RELATED COMPONENTS, AND PRECURSORS.

12. PROMPT MOBILE TARGET KILL

ABILITY TO PROMPTLY IDENTIFY, LOCATE, ENGAGE, AND DESTROY MOBILE MISSILES PRIOR TO LAUNCH.

13. SUPPORT FOR SPECIAL OPERATIONS FORCES (SOF)

PROVIDE SOF THE ABILITY TO DETECT, CHARACTERIZE AND COUNTER PARAMILITARY OR TERRORIST NBC THREATS AND SYSTEMS.

14. LOCATE, DETECT, AND DISARM WMD IN CONUS/OCONUS

RELIABLE AND TIMELY CAPABILITY FOR SPECIALIZED TEAMS TO DETECT, LOCATE, AND DISARM HIDDEN WMD. ABILITY FOR SPECIALIZED TEAMS TO DEFEND CRITICAL MOBILIZATION NODES AGAINST WMD THREATS IN PEACETIME.

THE CINCS' STAFFS, WORKING WITH THE SERVICES AND THE JOINT STAFF, CONTINUE TO REFINE THESE PRIORITIES WITH LESSONS LEARNED THROUGH WARGAMING, FIELD EXERCISES AND AS THEATER PLANS MATURE. ADJUSTMENTS TO THE CP PROGRAM WILL BE BASED ON BALANCING AVAILABLE RESOURCES WITH THE ESTABLISHED PRIORITIES AND CINCS' REQUIREMENTS.

IN SUMMARY, ADDRESSING THE CHEMICAL AND BIOLOGICAL THREAT IS A UNIQUE CHALLENGE REQUIRING A STRATEGY THAT ADDRESSES THE FULL SPECTRUM OF OPTIONS TO PROTECT OUR PEOPLE FROM THEIR EFFECTS. THE JOINT STAFF AND OUR REGIONAL CINCS ARE TAKING ON THIS CHALLENGE THROUGH DELIBERATE PLANNING IN EACH THEATER WHILE ACQUISITION PROGRAMS STRUCTURED TO MEET THEIR WARFIGHTING PRIORITIES PROCEED FROM CONCEPT TO FIELDED CAPABILITY.

Mr. WELDON. Thank you, Admiral. I thank all three of you for your opening statements.

To start things off, Dr. Prociv, some of us sat through a 2-hour classified briefing this morning by the intelligence community on the status of the threat, and obviously, we cannot go into all of the details that were presented to us. But would you, in an unclassified setting, present for the committee—because some of us were not at that hearing—generally what is transpiring around the world in terms of the growth of the dependence and use of chemical and biological weapons?

Mr. PROCIV. Sure.

Mr. WELDON. And specifically in light of the incident in Japan, the Aum incident, you might want to comment on that, which I guess is the first major use of this type of weapon in a public setting.

Mr. PROCIV. I would be glad to, Mr. Chairman. I think as the world has changed, and the whole approach to defense has changed, we are finding that more and more of the countries that were not involved initially in the nuclear business were interested in creating what we call the poor man's nuclear bomb. And so we found that a lot of what we call the rogue countries and some of the others that may be their allies have started to concentrate on chemical and biological as their weapon of choice for deterrence, for panic, and to gain other tactical advantages. Some of the revelations we have seen from the United Nations Special Commission [UNSCOM], for instance, of Iraqi stockpiles showed that not only did they have antipersonnel chemicals and biologicals but anticrop, antimateriel agents, things that we would not think of in the past.

A lot of what we see happening—and I think this also applies to the counterterrorism approaches that we are taking—is that a lot of Third World people and a lot of the so-called terrorists are getting better educated. The Aum Shinrikyo, for instance, had over 130 Ph.D's, technical Ph.D's available to them, to show them how to manufacture chemical and biological agents, how to disseminate them, how to protect against them and such. So the world has matured in the areas of biotechnology. The Internet is available. Just because we were concerned about the aflatoxin weapon that Iraq was developing, I just punched in the word aflatoxin, for instance, on the Internet and got over 130 citations: how to make it; what it is good for; how you can preserve it; what crops it destroys. It is an anticrop material. It destroys cotton crops and peanut crops. Not difficult to get this kind of information today.

And so, if you are a country with tendencies to try to hit your neighbor, take over his assets, dominate someone, these are excellent weapons to go after, and I think that they have determined that.

Mr. WELDON. From the standpoint of Russia, they have had a major production capability and current storage capabilities. As we now are working to have them enter into an agreement not just with us but with the other nations of the world, our hope is that, in fact, we will see a moving away from a reliance on these kinds of weapons. Is that what we are seeing in terms of our discussions with the Russians?

Mr. PROCIV. Yes, sir. There are two levels, and there are two ways to answer that. The Russians are working with us to destroy their stockpiles, and we are sharing information. We are providing some funds to help them set up a pilot plant as are other countries: the Germans are helping, the Dutch are helping, et cetera. I think that there is a lot of confusion as we keep hearing about their research and development program. As it turns out, research and development programs are not banned by the treaty; they are not prohibited in any way. And I suspect that kind of word will get out. What concerns us more is the word that we hear about the biological programs, and those, we are watching very, very carefully and in our counterproliferation program trying to come up with measures to prevent people from being interested in developing biologicals.

Mr. WELDON. Along that line—and I will mention this because it was in an unclassified report; as a matter of fact, it was carried in the Russian media—a witness whom we had before our sub-committee last year was Dr. Alexei Yablokov, who was a member of Yeltsin's National Security Council and a major environmental activist in Russia. And I read some of the reports quoting him as challenging the Russian military's assertion that it only has 40,000 tons of chemical weapons in storage, but it is closer in his mind to 100,000 tons. And without going into any classified data, my point is that there may be more than what the Russians are telling us in terms of their capabilities in this area; is that a fair assessment?

Mr. PROCIV. We have no way to judge that right now. We have seen the same literature that Yablokov has talked about. See, they have a different system there. In this country, when we were manufacturing, it was all controlled by the Government; it was all done internally. In their country, the manufacture was actually done in kind of a quasi-private organization, the Ministry of Petrochemical Engineering or some name like that—that is not an exact quote—would manufacture it, and then, they would deliver it to the military.

Well, the scientists who worked in these ministries claimed that they must have produced much more. The military claims no. So we have no records, no data, no evidence except what we read in the papers, except what we hear from these individuals.

Mr. WELDON. Now also, I understand, the updated National Intelligence Estimate [NIE] will be available sometime later this year in terms of the international threat; is that correct?

Mr. PROCIV. Yes, sir; that should be available I hope by the end of April.

Mr. WELDON. Very good.

Mr. PROCIV. However, the threat environment projection in the STARS are available now. They are excellent documents, I believe.

Mr. WELDON. You mentioned in your opening statement ballistic missile delivery capabilities. Do we even know that that has been the primary choice of delivery of this type of an agent? Is that what developed countries like Russia have in fact planned in the past?

Mr. PROCIV. We believe so. This is not an area of my expertise, but what I read is that ballistic missiles, small missiles are available on the open market, easily bought. Scuds are traded back and

forth. And if you can get the munition to hold the chemical agent, stabilize it in flight, you have an excellent means of delivery, yes.

Mr. WELDON. My concern is especially using them in the cruise missiles like the Scud, and the second half of this hearing, we will get into that in some more detail; but I appreciate that.

One final question before I turn to my colleagues. I will ask our admiral and our general to respond to the GAO study and some of the assessments. Obviously, you probably disagree with their assessment that there are still problems. Do you agree with their assessment that it is just tough getting DOD to keep this as a top priority, that especially in the current budget environment, as we crunch numbers to pay for the bigger ticket items, that programs like this tend to get shoved aside similar to what happens with personnel safety issues from time to time in the services? Is that a fair criticism, or are we really on the right mark here, and are we adequately funding, and do we have adequate attention of the highest levels of DOD to make sure that we are responding here? Either one of you.

Admiral FRY. Let me begin with that answer. As you say, Mr. Chairman, we have only just received on the joint staff the GAO report, and we are staffing a response. It would really be premature for me to jump into it.

Mr. WELDON. OK.

Admiral FRY. But with that said, the war-fighting CINC's and combatant commanders are responsible for ensuring that their forces are prepared for a wide variety of missions. But I would like to say that the focus on NBC that is coming from the joint staff and specifically from the chairman can be summed up in the chairman's assignment of this responsibility to the geographic CINC's, the fact that the CINC's recognize the potential for NBC deployment by their adversaries in theater planning. And most recently, the chairman has commended chem/bio training as a priority training issue, 1 of 11 such issues, to the commanders-in-chief. We have also included chem/bio play in wargaming and will continue that in the future.

Mr. WELDON. Did you want to add anything, General? Is that sufficient?

General FRIEL. Sir, I cannot comment specifically on all of the findings of the GAO, because I do not know all of them specifically, and I know they are working on the answers to them. But I can tell you that your opening statement included, I think, their assessment that commanders are not necessarily putting the proper emphasis on NBC defense, both training and probably equipment readiness in between the crises, is a fair assessment. And given primarily the current operation and maintenance dilemma that many of our commanders face in getting ready to deploy forces to Bosnia, increase the tempo of training for the Far East, units that are rotating into places where we have forces deployed, whether it be to Haiti or to the Middle East, they make decisions to spend those limited operational dollars on things that are of importance to them at the moment. And your assessment—and I think that GAO is probably correct that in times of crisis other than NBC defense, they will spend those dollars on those important crises at that time.

Mr. WELDON. Let me just ask one final question before I let my colleagues speak here, and that is as chairman of the R&D committee and being a member of this subcommittee for most of my tenure in Congress on the National Security Committee, it has always struck me that we tend to have each of the services doing research in an area and not sharing the technology or sharing the information. And I got heavily into this issue following the attack on the Stark when I realized that the Navy used of the OBA, the oxygen breathing apparatus, which is an antiquated system—I say that as a former fire chief myself—but it is still used on our ships today. We held some hearings on that and realized that the Navy was starting a new breathing apparatus program; NASA had a program for a breathing apparatus; the Air Force had a program, and all of them, in the end, had the same goal.

And I pick up this document, the "1995 Annual Report to Congress for Nuclear, Biological, and Chemical Warfare Defense," and I see under protection equipment that we have separate programs for the Army and Marine Corps; then, we have a different program for the Navy, Air Force, and Marine Corps; we have another one for the Navy and Marine Corps; then another one for the Air Force, Navy, Army, and Marine Corps; and another one for—all of which are basically breathing apparatuses and devices to allow for breathing in a confined area.

Are we making some headway in consolidating it? Because it would seem to me that the technology would be very similar if not the same for each of the services in terms of the environment that we are talking about.

General FRIEL. Mr. Chairman, there are actually two components, I think, that are important to understand. The first one is under the new joint management process, we are only going to field one mask for a land warrior. There are ongoing technology searches, especially in filter technology and maybe new mask technology and optics and in facepiece design that will ultimately change the current technology of the current mask, and there are components of that going on in each of the services, focused primarily on their service-unique needs, for example, high-performance aircraft or a land warrior or an Apache pilot or someone who is fighting and carrying basically a soldier's weapon.

But taking that technology or those developmental efforts into any developmental program will be managed as a joint program. And I can say that the JSMG, one of the major successes we had this past year that is in my written statement but not my oral, is that we have assigned responsibility now for a commodity area such as protective masks to a single service. And the responsibility for coordinating and integrating that now lies with the Marine Corps. The Marine Corps is, in fact, in charge of managing the mask. So as we bring in masks out of technology or tech base, any developmental efforts will be managed as a joint program.

And we are primarily moving towards two focuses: developing a mask for aviators; probably the Air Force will have lead service responsibility for doing that. The Army currently manages mask technology for ground-based warriors, and I suspect they will continue to do that. But the program will be coordinated by the Marine Corps with a technical panel, also joint, that looks at integrat-

ing the common technologies. I will submit to you that in the past, we probably had two laboratories doing the same thing. I think in the future you may find two laboratories working on masks but one working on a specific technology to solve a problem that may be unique to its service. But in the future, our joint process will ensure that only one service is working on a unique technology. They both may be working on a mask.

Mr. PROCIV. Now, I would like to add to that if I can, Mr. Chairman. I think it was very important that in this joint service agreement we now have different services taking the lead. In the past, when we developed a piece of equipment, it was strictly done by the Army. They were the executive agent, et cetera. Today, the Army, as our executive agent, actually farms out specific issues to those services which have the best capability, the best laboratory, the best background to do it, and I think that has been a big step in the changes we have made.

Another issue I would like you to be aware of is in the tech base in the 6.1 through 6.3. We have really gone to great pains to consolidate research and development projects, not just in DOD, but our technology base review today not only consists of those that are working on our specific problems. We encourage national laboratories, ARPA, industry. We even have an industry day, where we bring industry in on a proprietary basis to talk to us about their IR&D programs. We have gone to great pains to make sure there is no duplication but at the same time to open up our vista to all of these other organizations outside of DOD.

Mr. WELDON. Staff has asked me just to follow up on that, that the Department may propose legislative provisions to us that would exempt ARPA from the requirement to include all funding for the CB defense program in unique defense program elements, and I assume that would help you in your operation; is that correct?

Mr. PROCIV. We have not come to exact agreement yet with ARPA. Obviously, from our standpoint, the law is what it is. We are not going to go against the law. But we have had discussions with ARPA. We have an interest in having ARPA in our business; there is no question. What we would like to do is to bring them into our business at the research level where they can draw out some of the best talent in the country. Because the intent of the law is to coordinate and keep oversight on things, we would also like to have an oversight function over what ARPA does to make sure that it stays within the confines of the types of R&D that we have to do. And that is where we have not come to terms yet.

Mr. WELDON. Thank you.

Mr. Taylor.

Mr. TAYLOR. Thank you for holding this hearing, Mr. Chairman, and on behalf of my colleagues, I want to apologize for the panel. As you know, this is election day in a number of States, and I think some members are concerned about the next 2 years and figure they need to be absent today. So on behalf of them, I will apologize.

I would like to ask you in addition to the war between Iraq and Iran, what are some of the most recent instances where chemical and biological agents have been used in a conflict in the past decade or so?

Mr. PROCIV. There is a lot of history of bits and pieces. For instance—this is longer than a decade ago—in Yemen, mustard was used during internal civil war strife. We have some evidence that agents were used in Afghanistan during the Russian-Afghani conflict and that some agents were actually tested in Cambodia, Laos, and those places. Those were in one way or another tied to some connection with the former Soviet Union. Today, our concern really is with rogue nations such as Libya, Iran, Iraq, North Korea, countries such as those which, it appears, have adopted this as a policy of warfare. And, in fact, the most blatant case was in the Iran-Iraq war, where we saw quite a bit of use there.

Mr. TAYLOR. You know, you had mentioned earlier the proliferation. I think you used the number 25 nations. Why the reluctance to use these weapons? Is it the international condemnation that they would face? Is it the fear of reprisal from the opposite side because they have, in effect, gone beyond the normal limits? I mean, as recently as the Peruvians and the Ecuadorians fighting, the conflict in the former Yugoslavia, obviously these agents are present, and obviously, it is a concern. In your opinion, why have they not been used as often as they could have?

Mr. PROCIV. I will answer it from my perspective, and then, I will ask my colleagues to also see if they have anything to add to this.

I believe you are on the right track. I think it is the international condemnation. When you have leaders who are worried about their international image, they are going to be reluctant to do that. In the case of Iraq, I do not think they were that worried about their international image. Now, we were very fortunate that we did not get hit with any of that, but I think there was a reason. First of all, we threatened them with intense retaliation. That is always a fear with anyone: if I use this, what are they going to do to me? Second, we were a protected force. We did have equipment and protective gear, and we could survive an attack. Third, if you look at the history in Iraq, Hussein was always happy to use the stuff up north against the Kurds and over on the east side with the Iranians, but he never used it down south. And the reason for that is the weather patterns were different. For an adversary to use chemical or biological, he has to manage the weather, in a sense, and that is not always an easy thing for commanders who are not trained in that kind of technology to use. So some of them may not be at the point where they know how to use the materials yet.

But I think that the international condemnation and the threat of retaliation are the two most serious. I do not know, General Friel, if you have anything to add or Admiral Fry?

Admiral FRY. No, I do not have anything to add.

General FRIEL. Sir, I would only add that in the conflicts that we have watched over the past decade, since that is the time limit, the occasions on which there was probably an opportunity to use it and it did not occur was because they did not see an advantage to using it. And second, I would add that as Dr. Prociv said, the world's condemnation. Many of these countries have now become signatories to the chemical weapons convention or at least are supporting it and would receive—I would hope—vocal condemnation from the body of nations that have agreed not to use it. But I would say that

the primary motivator has been that they did not see an advantage to its use. That is one of the reasons why I believe this country must maintain a robust NBC defense program, because we can never find ourselves vulnerable to any country using it against us simply because we were not prepared to defend ourselves. That is the primary motivator, I believe, that prevents its use.

Mr. TAYLOR. General, it is my understanding that 4 million container units a year come into this country. And as I mentioned in last week's hearing with Chairman Weldon, he has a grave concern about missile defense; I have a grave concern that someone would simply package the biological or chemical or nuclear device up and send it to the United States. And less than—I think—one tenth of 1 percent of those container units are actually looked into by the Customs Service.

In a part of your comprehensive plan, what are you doing to try to give us the ability to look into these things as they are shipped into our country? It is my understanding that the vast majority of them come across land from Mexico and Canada, but a total of 4 million—I do not know if it is 20-foot containers or 40-foot containers—but let us say it is 20's. With a total of over 4 million a year coming into the country, what is being done to at least know that this type of agent is not being imported?

Mr. PROCIV. If I might at least initially try to answer that, of course, in our business, in the defense business, we do not deal much with the container business. That is in the counterterrorism area. But what we have been doing is—

Mr. TAYLOR. But if your biggest fear is a rogue nation or a rogue group, should you not be doing that?

Mr. WELDON. Will the gentleman yield on that for a moment?

Mr. TAYLOR. Sure.

Mr. WELDON. The second panel will get into the antiterrorism activities—the FBI will be a part of that panel, which has domestic responsibility. I am not saying we do not want you to answer it, but I just want to add that the second panel, I think, will be able to go into that in some detail.

Mr. PROCIV. In a prior life, I worried a lot about that also. You know, in addition to the number of containers you mentioned, you would be surprised at the percentage that no one knows where they are at any one time. It is a fairly large percentage. Those could be sitting somewhere else getting filled with something.

But on a related subject, we have done exercises where we have, in fact, been potentially held hostage by a rogue nation having put a biological material—and this was reported in Defense News—in a major urban area, and some rogue nation says hey, I am going to attack my neighbor, and if you come into this, I am blowing up all of these things, and you are going to have plague, and you are going to have all this. That is a difficult issue, a very difficult issue. If you take a look at places that we are not protecting, it is a very hard issue. It is easy to disseminate a biological material, say, in this building. I could take a lunch bag full of Anthrax and throw it in a high traffic area; let it blow around the building for awhile. That is a frightening thought. You would not know what had hit you for a few days.

Mr. TAYLOR. If I may, then, Mr. Chairman, the answer is that your three groups really are not looking into that.

Mr. PROCIV. No, however, we are providing the types of detection systems, the types of systems analysis, the models we use to the folks who are, and we are working on the acquisition side closely to make sure that they take care of our technology, and then, we can help them with anything that we have had experience with. That is really the interface between us and the counterterrorism group.

Mr. TAYLOR. Thank you, Mr. Chairman.

Mr. WELDON. Thank you, Mr. Taylor.

Let me just add one point under that. The CWC was mentioned and the effort to get—I believe—65 nations to sign that document, at which time, it will become law for those 65 countries. But the key to that is not just a document; it is the enforcement of it through the appropriate channels. And one of my big concerns, whether we are talking about the ABM Treaty, the CWC, or whether we are talking about the Missile Technology Control Regime is when there is a violation, we have to call the country that in fact enacts the violation. That is a current frustration I have right now with the administration regarding the MTCR. We have an obvious violation in the transfer of technology from Russia to Iraq that could be used to develop a long-range missile. Yet, we have not officially demarshaled Russia on that issue, which to me is outrageous how we could have a technology transfer of advanced accelerometers reported in the Washington Post, but we not ask the question of the Russians what happened. And the reason is that we do not want to have the impact that that violation would then cause in terms of that treaty. Well, what is the sense of having a treaty if you are not going to call the countries into question when they, in fact, violate the treaty? I do not expect you to respond to that, but I just wanted to make that point.

I would like now to offer time to the distinguished chairman of the Readiness Subcommittee, who actually was the impetus for the study that we included, as I mentioned in my opening comments, the GAO study, who has been a leader on this issue in this Congress, Mr. Bateman.

Mr. BATEMAN. Well, thank you, Mr. Chairman.

I am intrigued by your statements with reference to the new chemical garb or protective clothing. Are there some significant breakthroughs there? And if there are, are we well along in terms of procuring them and having them ready for our forces in the field?

Mr. PROCIV. Yes, sir. This has been a long-term program. We recognized many years before, even before I was in this position, while I was still in industry, that the garment that we had designed was a great winter garment. It was not really useful in many other places. One of the reasons that we really welcomed the input of the CINC's is we really think that garments and masks and things like that need to be CINC issues, because they are specialized. And for each climate, for each area of operation, you need a different one.

The latest technology that we have put on the market is the JLIST, joint lightweight suit program. The JLIST is producing a fabric that is just like our suits: it is lightweight; it is comfortable.

We have had soldierwear trials; they like them. We are in the process of doing a real wringout testing of those to make sure that we are going to buy the right product. But I think we are on the right track there.

Now, we did send some JLISTs to the Persian Gulf. The soldiers did like them. And if I might add, they liked them for more than the chemical use; they liked them because it is like wearing one big odoreater. You know, we had no water to shower guys with, but when they wore these suits, they did not smell so bad. So actually, it has a second purpose, which is always great when you can develop something with two purposes in mind.

Mr. WELDON. The ultimate dual use. [Laughter.]

Mr. PROCIV. Yes.

So we are in the process right now. The Marine Corps is the lead service on this. We are in the process of doing the final testing, and we should be in the acquisition of those suits here very soon.

Mr. BATEMAN. And you are funded for the acquisition when ready?

Mr. PROCIV. We are funded for the initial buy.

Mr. BATEMAN. And what are the dimensions of that buy or the planned buy?

Mr. PROCIV. I will have to take that for the record. I do not have someone here with those numbers.

Mr. BATEMAN. And all of these things are also going forward in terms of the mask as well?

Mr. PROCIV. Yes, sir; in fact, General Friel, you might want to comment on the new mask, some of its features.

General FRIEL. Sir, there are two masks. The M-40 mask is not really new this year. A new version, the M-41-A1 and the M-42-A2, which is a version of the same mask that we issue to tankers and those who are inside of collective protection systems. But we have a new aviator's mask, the M-48, which is basically the same technology, although we provide a face piece and the optics that are appropriate for a pilot flying a high-performance aircraft. It will replace the old pressured mask that required a large canister of batteries so that if they left the aircraft, they were safe.

We will begin fielding next year the new M-48 mask, and we are currently fielding the M-40. So we have a new mask planned for every warrior or aviator in all four services now, finally.

Mr. PROCIV. Mr. Bateman, if I might add, as usual, my staff carries more material than I do. We intend to procure 430,000 of the JLIST suits by fiscal year 2003, and that will get us into force package one in its entirety. We do have a requirement of about 600,000 to cover the two MRC contingencies, and we will fill that in the out-years.

Mr. BATEMAN. Is this something that is proprietary with some particular company or innovator, or is it something done through Government research, and then, it is contracted out on the basis of specifications?

Mr. PROCIV. The answer is yes, probably, to all of those. It is a proprietary material. It is a very small charcoal bead that is impregnated on the fabric. And the way it is done is a proprietary system. However, we can procure the fabric. There is a U.S. li-

censee to manufacture the fabric here. And the design, however, of the suit and the various features of the suit are U.S. designed.

Mr. BATEMAN. Mention was made that there is existing cooperation between the Department of Defense and those who are responsible for counterterrorism activities involving the potential of chemical and bacteriological ingredients. Are there any impediments in law to all of the degree of cooperation that is needed?

Mr. PROCIV. Not that come to mind. I might ask General Swain to—

General SWAIN. Sir, General Swain. I am the Deputy Assistant Secretary of Defense for Special Operations. There are no impediments right now that would prevent us from the interagency co-ordination that we now have.

Mr. BATEMAN. Thank you very much.

Thank you, Mr. Chairman.

Mr. WELDON. Thank you, Mr. Bateman, and for your leadership on this issue, I thank you.

Should we accelerate that? You were mentioning that the funding, I understand, is supposedly in the budget. Should we accelerate it, get that equipment out in the field? The reason why I asked the question is because our second panel is going to talk about domestic problems and interaction, and a logical concern is that while we are ultimately preparing the military, I know that our civilian community does not have access to this same technology, and they may be the ones that need it. So should we accelerate the buy with that also in mind?

Mr. PROCIV. This suit may not be the right suit for CW terrorism response. This suit was designed for long-term wear, for soldier comfort, for a warfare situation. For domestic terrorism acts, you may want to consider a different kind of an ensemble. For instance, in the chem demo program, which we are also responsible for, although our people use the military type of suit, we do have a second protective overgarment that we provide to local communities in case of disaster which is OSHA-approved; it is safer; it is more self-contained.

So in the counterterrorism area, we would have to look at the balance of that. Will this suit suffice or will we need something special? We do not know that yet.

Mr. WELDON. My fear is—and we will get into this in the second panel—that if we have a subway incident in America, our first responders, who are not going to be the military; they are going to be the fire department—in many cases, volunteers. Are they going to be prepared? Do they have the equipment? Do they have the technology they need to respond? And if not, can they get it quickly? So I do not expect you to answer that, but that will be a question that I will pose to the second panel.

Mr. PROCIV. OK.

Mr. WELDON. Mr. Hansen.

Mr. HANSEN. Thank you, Mr. Chairman.

As the panel knows—and I would like to ask kind of a local question if I could—out in western Utah, in Tooele, UT, where we have Tooele South, which is now the only one in the 48 states building the baseline technology to demil 42 or 43 percent of our obsolete chemical weapons. And also, in Dugway, we have testing on a regu-

lar basis. Because that is a great concern to our folks, and we see the need of it and what we are doing, I have a memo that was written by Philip Coyle, director of operational tests and evaluation and John Burt, director of test systems engineering and evaluation. And this said this about Dugway Proving Ground: "Occupies valuable land and air space to test and evaluate missions that can't be conducted elsewhere without high risk to environmental and security compromises." They noted that the chem and bio testing mission in particular should be conducted at Dugway because of its unique geographical features. Do you agree with that?

Mr. PROCIV. Yes, sir, Mr. Hansen. Dugway is a very unique facility. There is no other place like it for the kind of testing that we have to do. We are routinely now conducting biological testing on equipment that we are about to field. Colonel Doesburg, who is our manager, the director of the joint program office for biological defense runs an annual shootoff of biological detectors at Dugway. The data say there is not another place in this country where we can do that, where we have the concurrence of the communities, the state; where we have the instrumentation in place. I have to tell you that it is an extremely valuable location for us.

Mr. HANSEN. Well, we are happy to contribute our part of helping out the national defense or local defense or whatever it may be. Are there assurances there that this is done in a very safe manner? Are we concerned at all? I mean, we have a Wasatch Front that 70 percent of the people in that State just live over the hill 50 miles or less than that east of that area, and that is a great concern. Of course, we have always got those who are a little radical. But what are your concerns? Are we doing this all in a very safe manner?

Mr. PROCIV. Yes, sir; we do no open-air testing of agents. Everything that is done at Dugway is simulants. Even the biological materials that we use to test our detectors are simulants. We do have laboratories there that use the actual agents. We do correlation experiments to make sure that what we do with the simulants is as precise as we can get statistically to what we do in the laboratory. The laboratories are specifically designed to handle these kinds of agents with multiredundant systems, redundant filter systems. There is nothing that can get out of those laboratories short of a catastrophe that would blow the building down.

Mr. HANSEN. In a relatively short time, we expect to see the baseline technology in Tooele South start going. And they have a huge job to do predicated on this same type of technology that was at Johnston Island. Are you confident that this will be done safely, that there are enough redundancies and systems built into that that there will be no problem?

Mr. PROCIV. Yes, sir; the system that we have designed for Tooele and for all of the other sites is not just an incinerator. It is a highly-complex piece of instrumentation. The systems, the redundant systems, the filter systems, the protection that we provide in there, we do not expect any harmful effluent to come out of that stack at all. So I really feel confident that we have got the best system available in our baseline technology.

Mr. HANSEN. There is a past safety engineer by the name of Jones who has written ad nauseam about how he did not feel and

did not agree with what you have said, Doctor, that he felt there were really some flaws and glitches in the thing. I am sure you have looked at his comments. Could you publicly tell me what your reaction to that would be?

Mr. PROCIV. Yes, sir; we treat every one of those comments seriously, because, in fact, we are very concerned about something getting away from us, something that maybe our technology did not pick up. Soon after he raised these comments, we asked the DOD IG and the Army IG to go out and inspect the facilities, look at the claims, see what is done. Some of those claims that he made were in fact true, but because the facility had not been completed. When the facility was actually completed, those claims would not have been valid. None of the inspection agencies that went out after those claims were made found anything wrong at that facility. So we feel very confident ourselves that there is nothing there that will pose any risk to health and safety to the local population or to anyone else.

Mr. HANSEN. It seems that the consensus is that there will be an increased threat as the world conditions change in the type of work that you folks do. Because of that, if we can accept that premise, do we consider a workload increase? Do you feel that we are going to be doing more at these facilities to get a better handle on these things, better understanding of this?

Mr. PROCIV. When you say facilities, I believe that is true for Dugway. I believe for Tooele, when we finish destroying those chemical agents, we are going to clean up and move out of there.

Mr. HANSEN. This is not the place, Mr. Chairman, but I would like to have the opportunity to talk to this group some way about how we are going to get rid of not only Tooele, which I think we are well into, but Umatilla, Lexington, all of those areas. I still think that is a very interesting issue that really has in my mind not totally been resolved, and I will not bring it up here, Mr. Chairman, but I would like to have that opportunity to talk to the gentleman.

Mr. PROCIV. We will be pleased to talk to you about that.

Mr. HANSEN. Thank you, Mr. Chairman.

Mr. WELDON. Thank you, Mr. Hansen, and thank you for the cooperation of your district in this effort.

Mr. Kennedy.

Mr. KENNEDY. Thank you, Mr. Chairman. I will just take a moment.

Leading to the next panel, I was going to ask about what kind of wargaming they plan to do in terms of domestic terrorism. But I was anxious to find out what wargaming has revealed insofar as chemical and biological threat that you have done thus far. How many wargames roughly? How often do you do them? How do you work the different services into the wargaming scenarios that you play out?

Admiral FRY. We have conducted two wargaming scenarios most recently. They are generally command post exercises, sir. To get into the specifics and what we have learned from them, it would probably not be appropriate for an open hearing. But I will say that in all cases, they highlighted the danger in these weapons and the requirements for our increased preparedness.

There are two areas that the CINC's are working on right now from lessons learned in some of these areas. One is the commander of EUCOM is involved in an ACTD—an advanced concept-test demonstration—on weapons to attack storage and production facilities, and the commander of the Central Command is working on a similar advanced capabilities demonstration on protecting our ports and airheads against BW use.

Mr. PROCIV. I might also add—and I am sure that our folks from special operations mentioned it—but there have been a number of interdisciplinary exercises also conducted at [NDU] National Defense University on the leadership of the [SO/LIC] Special Operations/Low Intensity Conflict folks. So I am sure they will talk about that. But it is a very well-exercised initiative right now.

Mr. WELDON. Thank you, Mr. Kennedy.

Mr. Scarborough indicates he has no questions, so I will defer to Mr. Bartlett for 5 minutes for any questions he might have.

Mr. BARTLETT. Thank you very much, and I am very appreciative, Mr. Chairman, that you let me sit in on this. I am not a member of this subcommittee of the National Security Committee, but I am very pleased that you let me sit in on this.

Dr. Prociv, it is good to see you again.

Mr. PROCIV. Thank you, Mr. Bartlett.

Mr. BARTLETT. I have a couple of concerns and then a couple of questions. One concern stems from our experience in the gulf war where we had a real problem in getting enough vaccines for our young men and women. And I understand that some of the time, we had to vaccinate them after they were on the ground in the gulf. There was a very high level of recognition that we needed to have an upgrade in our ability to provide vaccines, and there was in the budget about 3 years ago, I think, \$150 million to build a vaccine facility.

I think that we still have this need to make sure that we have vaccines available for both endemic organisms that our young men and women may not be immune to, and we also have a need for vaccines for any possible weapons of mass destruction with agents that we would need to be able to counter. And so, I have a concern that we are not moving rapidly on this front, and that it has been 3 years now, and I would just like to ask where we are.

Another concern I have—and I will come back in just a moment and let you answer—another concern I have is that I understand there are 25 nations, all of whom could be hostile to us in possible circumstances, that are developing weapons of mass destruction. And many of those weapons are biological and chemical weapons. If this is true, sir, then I have a great deal of difficulty understanding how the Department would plan to cut hundreds of millions of dollars out of our chem and bio budget. That does not seem to me to be a prudent action.

Second, recognizing that these weapons of mass destruction are being built in many countries—Russia is one of them aggressively building them, as I understand it—I understand that we are talking about cutting 25 percent from the recapitalization of the counterproliferation fund, and I also have a concern about that, and I would just like your comments on these concerns.

Mr. PROCIV. Yes, sir; I would be glad to answer those. Rather than my going into the vaccine acquisition program, I am going to give it to you right from the horse's mouth, Col. John Doesburg here, who lives with this day-to-day and will give you the exact details.

Colonel DOESBURG. Sir, I am the joint program manager for biological defense, and one of the areas that I cover is vaccines. I think I would start with addressing that for the past 3 years, we have actually been buying vaccines, in particular against the high-threat possible biological warfare agents that are out there, and we have made fairly significant process in particular with Anthrax. We are within less than 12 months of reaching the requirements that we have been given by the Department of Defense of 1.2 million troop equivalent doses of Anthrax. To outline a troop equivalent dose, it includes the number of shots, in this case, it takes six shots currently under the FDA license. We have also been procuring botulinum toxoid, and we have also been procuring what is referred to as the antitoxin, and those have been going on.

In the meantime, we have been working on a prime systems contract for the procurement of vaccines. I hope to be able to award that contract, if not at the end of this fiscal year, at the very beginning of the next fiscal year. Our intent under the prime systems contract is to use what is available in commercial industry and to be able to go out and to produce vaccines and not have to build a vaccine facility within the Department of Defense. Right now, it looks very promising, and I think we are going to be very successful. And we will be able to complete the high-threat vaccines and move very quickly into what are referred to as the lesser threats and to be able to procure vaccines for those.

Mr. WELDON. Will the gentleman yield on that point?

Mr. BARTLETT. Yes, sir.

Mr. WELDON. Colonel Doesburg, would you, for the record provide for us what impact it would have if we ramped up the funding for the program that you have just described in terms of the vaccine acquisition and the ongoing program that you have underway to deal not just with Anthrax and the other antitoxins you talked about but perhaps with other solutions that you are looking at within your jurisdiction?

Colonel DOESBURG. Sir, I would have to take that for the record to give you a specific.

Mr. PROCIV. Now, in your second question, Mr. Bartlett, let me just preempt it. I am going to ask Admiral Fry to give you the whole picture, but we have gone through a number of exercises, and to date, we have not taken any of the cuts. Unfortunately, in the building, as you may understand, everybody is taking cuts. All of the programs are susceptible to various priorities. So far, we have survived very well. We are working very, very closely with the user so we understand what his needs are. And I will ask Admiral Fry, maybe, to add to that.

Admiral FRY. Yes, sir; there is currently underway an end-for-end assessment of the entire counterproliferation program. OSD, the services, and the joint staff are participating, comparing the program that we have against the CINC's requirements. As I said,

that assessment is in progress. There have been no decisions made yet, and it will not be completed until June, sir.

Mr. PROCIV. It will be June 30.

Mr. BARTLETT. Thank you very much.

My concern was—Mr. Chairman, and then I thank you for this time—I think there is almost nobody who would say that this threat is decreasing. And, in the face of a threat which is almost certainly increasing, it just does not seem prudent to me to be cutting budgets and pulling back. We ought to be going in the opposite direction here.

Thank you very much.

Mr. PROCIV. Thank you, Mr. Bartlett.

Mr. WELDON. Thank you, Mr. Bartlett.

One followup question I had, Colonel Doesburg. In your planning, are you also planning for a possible civilian application of the antidotes that you have within your responsibility? Is that a part of your planning process? And if so, how is that being developed in terms of scenarios and the extent of the backup materials we would have available to us and so forth?

Colonel DOESBURG. Senator, the current program that I have, I am going to go into production for the stockpile for the Department of Defense. There are two other pieces that are being looked at by the Department of Defense. One of those is called a commander's reserve, which, in fact, looks at other scenarios that are out there. That is currently under review in the Department of Defense.

Mr. PROCIV. If I might add to that, there is a synergy here, sir, that once we go through our acquisition process and we qualify various companies under FDA to produce these vaccines, these vaccines will be available for purchase by civilian agencies, other agencies that may need them. So we are providing a contribution to the marketplace in the sense that we are helping make these available for anybody else to procure them. But our procurement today is strictly for the DOD.

Mr. WELDON. If you would, for the record, each of you provide for us any elements of the R&D sections of the defense budget that if money were plussed up would benefit your individual programs and outline that for us. We would appreciate that. If this Congress is indeed going to increase defense spending, which I anticipate it will, we want to make sure it is done consistent with those programs and priorities that will pay the most dividends. And obviously, the areas that you are all involved in are one of, certainly, my key priorities, and I would like to be helpful if I can in that process.

Are there any other followup questions of any members?

Mr. Bateman.

Mr. BATEMAN. Mr. Chairman, thank you.

I am not sure that you are the people who would best be able to answer this question, but a few days ago, someone was telling me that there may be a problem that relates to the medical problems experienced by the gulf war combatants on account of taking multiple vaccinations or inoculations before they are sent over there and without any testing to determine whether the combination of the vaccines that they are given may have adverse health

effects. Do any of you have anything to do with that area of concern?

Mr. PROCIV. Let me ask Col. Gary Hurst. Colonel Hurst is an M.D. He works for the Medical R&D Command and has been involved in the work leading up to that.

Colonel HURST. Sir, these are very real concerns. Anytime you inject multiple proteins foreign to an individual, they can interact. And safety and efficacy—effectiveness—are always the No. 1 concern for the soldier. And that is one of the reasons it takes so long to get a new vaccine into the field, something like 15 to 20 years to make sure all of the ducks are lined up in order.

There is a real good example of this which dates back—if you are old enough.

Mr. BATEMAN. I probably am. [Laughter.]

Colonel HURST. Do you remember the swine flu vaccine, when a number of people got Barré syndrome from that, so these are real concerns, and that is why we move very carefully and cautiously in this area.

Mr. BATEMAN. Well, the thing that I found intriguing was not so much that with any given vaccine, obviously, there is some measure of risk but that there was no body of data on how combinations of vaccines might interact with one another.

Colonel HURST. That is true, and we are just beginning to realize that we have to look at all of these areas, and the term omnivalent vaccine has surfaced. Well, that is the gold standard. If we could give one injection and cover everything, it would be wonderful. But there are any number of obstacles, and these hidden pitfalls have all got to be researched. You have to research it individually, and then, you have got to look at it in combination to make sure it did not create new problems.

Mr. BATEMAN. Well, is there a robust research program ongoing in this area?

Colonel HURST. In vaccines, this is a relatively new area. The answer to that is, it is just beginning, and to a part, from the spinoff from the gulf war. With drugs, this has been looked at for a very long time, that drugs interact, and you must check for synergism and that. But with vaccines, it is relatively new.

Mr. BATEMAN. Well, one of the things, Doctor, that I am sure the committee would be interested in hearing from you on is the extent to which problems of this kind would be benefited by a higher dollar support for them, because it seems to me it is an incredibly sensitive area. And if we are just beginning a program that ought to be mature and robust, we need to do what we can to advance it, and if it is a lack of money, we would like to know.

Mr. PROCIV. I appreciate that, Mr. Bateman. I might add, too, that Colonel Doesburg will be conducting a study here in the near future. We will be paying for that study out of the joint bio office. We will be doing it up in Frederick in the medical research and development facilities, the Institute of Infectious Diseases, in fact. One of the problems that we experience, of course, in this unlike in other medicines, we cannot do human testing, because to do efficacy testing, you have to expose humans to something and then treat them. And we are certainly not in the business of exposing anybody to anything. So we have to rely on animal models. Animal

models sometimes will lead us down the wrong path, and it is quite known. So we have to devise a program that we have some confidence in, and that is essentially what Colonel Doesburg is going to be working with the medical folks to do.

Mr. BATEMAN. Well, I am very pleased to know that we are doing those kinds of things. It would seem to me to have been desirable to have begun to do it earlier. But I certainly do not want it to be a program or an activity that does not mature and produce as good results as we might have had for lack of money, because it really seems to me to be a very strong priority.

Mr. WELDON. Thank you, Mr. Bateman.

Mr. Bartlett, do you have any followup questions?

Mr. BARTLETT. I would just like to state for the record, Mr. Chairman, that Dr. Prociv does not fit the stereotypical mold. When he says I am from the Government, and I am here to help you, he is believable.

Mr. PROCIV. Thank you very much, Mr. Bartlett.

Mr. BARTLETT. You are quite welcome.

Mr. WELDON. You have just been paid a very high compliment by someone who is not usually complimentary of the Federal Government. [Laughter.]

Mr. PROCIV. Thank you very much.

Mr. WELDON. With that, we will dismiss our first panel. Thank you all for coming. We appreciate your being available if there are additional questions, and we appreciate your response to our written questions for the record. Thank you all.

Our second panel, I think, is going to be equally interesting because in this second panel, we will have a discussion of DOD inter-agency planning and preparation for response to possible terrorist use of chemical and biological agents in an urban or other setting in the United States and perhaps also in what we are doing in assisting other countries with problems that they have. And we have a distinguished panel here which is now assembling itself at our table. I will introduce them in a moment.

Our witnesses today—and I welcome Robert Blitzer, Acting Section Chief for Domestic Terrorism, Federal Bureau of Investigation; Brig. Gen. Thomas E. Swain, Deputy Assistant Secretary of Defense for Policy and Missions; Clay Hollister, Deputy Associate Director of Response and Recovery for the Federal Emergency Management Agency; Deputy Fire Chief LeRoy Oettinger of the Montgomery County, MD, Department of Fire and Rescue Services; and Jack Sawicki, GEOMET Technologies, who is a member of the Arlington, VA, Local Emergency Planning Committee. We welcome each of you.

As you know, the focus of our hearing today is on chemical and biological weapons and the threat that they pose to both our military services and to our civilian population. But I want to just give you a little heads-up that my focus in this hearing during my questioning will not just be on how we can assist local responders in terms of biological and chemical weapons, but on response in general to major disasters that we face in this country, because all too often, people like the chief here are faced with frontline decisions in a very quick period of time that involve risks far greater than they have the expertise or in-house capability to deal with, whether

it is the bombing of the World Trade Center or the Oklahoma City disaster or whether it is a major earthquake in San Francisco or Oakland that causes freeways to collapse or a hurricane that rips across south Florida that causes terrible destruction of all of the infrastructure. Quick decisions have to be made. And so, my questions will focus along the line of whether or not from a process standpoint we in the Federal Government have our act together. Some of these will obviously be referred to FEMA—and I have the highest respect for the current director, Mr. Witt, whom I think is doing an excellent job—but will be along the line of, Are we doing enough? Are we giving the local emergency responder, who more often than not is not a paid military professional, who, in many cases, is not even a paid fire or emergency service responder or who is a volunteer, Are we making available the kinds of resources that they can bring to bear on a problem that they are confronted with? This happens time and again across the country in all 50 States. So that will be a line of questioning that I will be pursuing following your opening statements.

We thank you all for being here. We think you will give us the broad perspective that we are looking for. We will accept all of your written statements and allow you to speak verbally for whatever time you would like. We would ask you to keep your comments relatively short so we can get into questions, but we do welcome your individual perspectives, and we will start off with Mr. Blitzer. Thank you.

STATEMENT OF ROBERT M. BLITZER, CHIEF, DOMESTIC TERRORISM—PLANNING SECTION, NATIONAL SECURITY DIVISION, FEDERAL BUREAU OF INVESTIGATION

Mr. BLITZER. Good afternoon, Mr. Chairman. Thank you for the opportunity to address your committee on the chemical and biological terrorism threat. I would also like to tell you about the proactive measures which have been taken by the FBI to detect, prevent, and respond to the use of chemical and biological weapons in the United States. As you know, the FBI is the primary agency for foreign counterintelligence and counterterrorism investigations within the United States. We have developed and we coordinate a counterproliferation program in order to prevent the malevolent use and/or proliferation of nuclear, biological, and chemical weapons in the United States. The program relies on foreign counterintelligence and counterterrorism investigations in the United States, criminal investigations, close coordination with the U.S. intelligence and law enforcement communities; cooperation with international authorities, proactive domestic plans, and training initiatives.

Recent terrorist acts, including the 1995 Sarin gas attack in Tokyo and the 1993 bombing of the World Trade Center in New York reflect a trend of increasingly violent terrorist attacks with the intent to cause mass casualties and raise higher levels of fear among civilian populations than in the past. The ramifications of the terrorist acts committed in the United States are great. The potential for loss of life and damaging psychological effects from a terrorist attack in the United States involving CB weapons is even greater. Low production costs, ease of concealment, and lethality

conceivably make some CB agents attractive weapons for criminals or terrorists.

Due to the relative ease with which a CB weapon could be acquired or constructed by a terrorist or terrorist group, the FBI remains vigilant to that possibility through our active investigations and close coordination with the intelligence community. In consideration of the magnitude and potential of catastrophic consequences of the release of such a weapon, we have aggressively pursued countermeasures and readiness programs in coordination with the Department of Defense, the U.S. Public Health Service, FEMA, and other Government agencies to respond to and mitigate the consequences of such an attack.

Fortunately, to date, our investigations in the United States reveal no intelligence—I repeat no intelligence—that state sponsors of terrorism, international terrorist groups, or domestic terrorist groups are currently planning to use these deadly weapons here. Our primary goal is to prevent such an incident from occurring. Second, we must ensure that we have the capabilities to respond swiftly and decisively should an incident occur.

Despite the fact that conventional methods of attack are the principal choice of terrorist organizations today, the use of a CB weapon or agent can no longer be ruled out, as the Sarin gas attack in Tokyo demonstrated. The recent Sarin gas attack in Japan, allegedly carried out by the Aum Shinrikyo, crossed the threshold with the use of a nerve agent to attack a civilian population. Other groups may be inspired to employ such weapons for future terrorist attacks due to the worldwide attention the Japanese attacks received. In response to that attack, the FBI liaised extensively with the Japanese national police during that period of time.

The only documented chemical/biological attack in the United States involved the use of a biological agent that occurred in 1984 when two members of the Rajneesh religious sect in Oregon produced and dispensed salmonella bacteria in restaurants in order to affect the outcome of a local election. 715 people were affected. Fortunately, there were no fatalities. There were two convictions in that case.

In 1992, the FBI prevented a CB attack by subjects who manufactured Ricin, which is a deadly poison derived from castor bean seeds. The toxin is easily prepared, and all of the materials necessary to produce it as well as the instructions for its production were acquired from publicly available sources. The four individuals convicted for producing the Ricin espoused extremist anti-Government, anti-tax ideals and advocated the violent overthrow of the Government. They had specifically targeted a deputy U.S. marshal to carry out the attack, and they were going to carry out the attack by smearing the toxin on various components of his vehicle. The case was the first biological weapons case brought to trial and successfully prosecuted under the Biological Weapons Antiterrorism Act of 1989. The four subjects were found guilty in the Ricin poisoning plan. They each received prison sentences ranging between 33 and 48 months' incarceration.

There is a valid concern over the relative ease with which biological materials and chemical precursors can be obtained. In May of last year, an individual acquired three vials of yersinia pestis,

the organism which causes bubonic plague, from a biological culture laboratory. The material was recovered unopened by law enforcement officials, and the individual was arrested and charged with fraud. In June last year, he was indicted by a Federal grand jury, and he has pled guilty and is pending prosecution.

That summarizes my opening remarks, Mr. Chairman.
[The prepared statement of Mr. Blitzer follows:]

STATEMENT OF ROBERT M. BLITZER

CHIEF
DOMESTIC TERRORISM/PLANNING SECTION
NATIONAL SECURITY DIVISION
FEDERAL BUREAU OF INVESTIGATION

HEARING ON
CHEMICAL-BIOLOGICAL DEFENSE PROGRAM
AND RESPONSE TO URBAN TERRORISM

BEFORE THE
HOUSE NATIONAL SECURITY COMMITTEE
SUBCOMMITTEE ON MILITARY RESEARCH AND DEVELOPMENT

- THREAT BRIEFING
- PANEL II: FBI AND INTERAGENCY PLANNING AND PROGRAM
FOR RESPONSE TO URBAN TERRORISM

UNITED STATES HOUSE OF REPRESENTATIVES

MARCH 12, 1995

THE THREATOPENING STATEMENT

MR. CHAIRMAN,

THANK YOU FOR THE OPPORTUNITY TO ADDRESS YOUR SUBCOMMITTEE ON THE CHEMICAL AND BIOLOGICAL (C/B) TERRORISM THREAT. I WOULD ALSO LIKE TO TELL YOU ABOUT THE PROACTIVE MEASURES WHICH HAVE BEEN TAKEN BY THE FEDERAL BUREAU OF INVESTIGATION (FBI) TO DETECT, PREVENT, AND RESPOND TO THE USE OF C/B WEAPONS IN THE UNITED STATES.

THE FBI IS THE PRIMARY AGENCY FOR FOREIGN COUNTERINTELLIGENCE AND COUNTERTERRORISM INVESTIGATIONS WITHIN THE UNITED STATES. THE FBI HAS DEVELOPED AND COORDINATES A COUNTER-PROLIFERATION PROGRAM IN ORDER TO PREVENT THE MALEVOLENT USE AND/OR PROLIFERATION OF NUCLEAR, BIOLOGICAL, AND CHEMICAL WEAPONS IN THE UNITED STATES. THE PROGRAM RELIES ON FOREIGN COUNTERINTELLIGENCE AND COUNTERTERRORISM INVESTIGATIONS IN THE UNITED STATES, CRIMINAL INVESTIGATIONS, CLOSE COORDINATION WITH THE U.S.

INTELLIGENCE AND LAW ENFORCEMENT COMMUNITIES,
COOPERATION WITH INTERNATIONAL AUTHORITIES PROACTIVE
DOMESTIC PLANS AND TRAINING INITIATIVES.

RECENT TERRORIST ACTS, INCLUDING THE 1995 SARIN GAS ATTACK IN TOKYO AND THE 1993 BOMBING OF THE WORLD TRADE CENTER IN NEW YORK CITY, REFLECT A TREND OF INCREASINGLY VIOLENT TERRORIST ATTACKS, WITH THE INTENT TO CAUSE MASS CASUALTIES AND RAISE HIGHER LEVELS OF FEAR AMONG CIVILIAN POPULATIONS THAN IN THE PAST. THE RAMIFICATIONS OF A TERRORIST ACT COMMITTED IN THE UNITED STATES ARE GREAT. THE POTENTIAL FOR THE LOSS OF LIFE AND DAMAGING PSYCHOLOGICAL EFFECTS FROM A TERRORIST ATTACK IN THE UNITED STATES INVOLVING C/B WEAPONS ARE EVEN GREATER.

LOW PRODUCTION COST, EASE OF CONCEALMENT, AND LETHALITY CONCEIVABLY MAKES SOME C/B AGENTS ATTRACTIVE WEAPONS FOR CRIMINALS OR TERRORISTS. DUE TO THE RELATIVE EASE WITH WHICH A C/B WEAPON COULD BE ACQUIRED OR CONSTRUCTED BY A TERRORIST OR TERRORIST GROUP, THE FBI REMAINS VIGILANT TO THAT POSSIBILITY

THROUGH OUR ACTIVE INVESTIGATIONS AND CLOSE COORDINATION WITH THE INTELLIGENCE COMMUNITY. IN CONSIDERATION OF THE MAGNITUDE AND POTENTIAL CATASTROPHIC CONSEQUENCES OF THE RELEASE OF SUCH A WEAPON, THE FBI AGGRESSIVELY PURSUES COUNTERMEASURES AND READINESS PROGRAMS IN COORDINATION WITH THE DEPARTMENT OF DEFENSE, THE U.S. PUBLIC HEALTH SERVICE, THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), AND OTHER U.S. GOVERNMENT AGENCIES TO RESPOND TO AND MITIGATE THE CONSEQUENCES OF SUCH AN ATTACK.

FORTUNATELY, TO DATE, OUR INVESTIGATIONS IN THE UNITED STATES REVEAL NO INTELLIGENCE THAT STATE SPONSORS OF TERRORISM, INTERNATIONAL TERRORIST GROUPS, OR DOMESTIC TERRORIST GROUPS ARE CURRENTLY PLANNING TO USE THESE DEADLY WEAPONS IN THE UNITED STATES.

OUR PRIMARY GOAL IS TO PREVENT SUCH AN INCIDENT FROM OCCURRING. SECONDLY, WE MUST ENSURE WE HAVE THE CAPABILITIES TO RESPOND SWIFTLY AND DECISIVELY SHOULD AN INCIDENT OCCUR.

CHEMICAL/BIOLOGICAL TERRORISM THREAT

DESPITE THE FACT THAT CONVENTIONAL METHODS OF ATTACK ARE THE PRINCIPAL CHOICE OF TERRORIST ORGANIZATIONS TO DATE, THE USE OF A C/B WEAPON OR AGENT CAN NO LONGER BE RULED OUT, AS THE SARIN GAS ATTACK IN TOKYO DEMONSTRATED. THE RECENT SARIN GAS ATTACKS IN JAPAN ALLEGEDLY CARRIED OUT BY AUM SHINRIKYO CROSSED THE THRESHOLD WITH THE USE OF A NERVE AGENT TO ATTACK A CIVILIAN POPULATION. OTHER GROUPS MAY BE INSPIRED TO EMPLOY C/B WEAPONS FOR FUTURE TERRORIST ATTACKS DUE TO THE WORLDWIDE ATTENTION THE JAPANESE ATTACKS RECEIVED.

IN RESPONSE TO THE MARCH 20, 1995 ATTACK IN THE TOKYO SUBWAY SYSTEM, THE FBI OPENED A CRIMINAL INVESTIGATION BASED UPON A VIOLATION OF TITLE 18, U.S. CODE, SECTION 2332, WHICH AUTHORIZES FBI EXTRATERRITORIAL INVESTIGATION, DUE TO THE FACT THAT TWO AMERICAN CITIZENS WERE VICTIMS OF THE SARIN GAS ATTACK. THANKFULLY, BOTH OF THEM SURVIVED THEIR INJURIES.

CHEMICAL/BIOLOGICAL INCIDENTS: INVESTIGATIVE SUMMARIES

THE ONLY DOCUMENTED C/B ATTACK IN THE UNITED STATES INVOLVED THE USE OF A BIOLOGICAL AGENT. THE ATTACK OCCURRED IN OREGON IN 1984, WHEN TWO MEMBERS OF THE RAJNEESH RELIGIOUS SECT PRODUCED AND DISPENSED SALMONELLA BACTERIA IN RESTAURANTS IN ORDER TO AFFECT THE OUTCOME OF A LOCAL ELECTION. 715 PERSONS WERE AFFECTED; FORTUNATELY THERE WERE NO FATALITIES. THE FBI INVESTIGATION RESULTED IN THE FEDERAL TRIAL OF TWO SECT MEMBERS WHO WERE SUBSEQUENTLY CONVICTED OF TAMPERING WITH CONSUMER PRODUCTS AND SERVED OVER THREE YEARS IN FEDERAL PRISON: ONE WAS A NURSE WHO PRODUCED THE SALMONELLA, AND THE OTHER WHO DISPERSED IT, WAS THE SECRETARY TO THE SECT LEADER.

IN 1992, THE FBI PREVENTED A C/B ATTACK BY SUBJECTS WHO MANUFACTURED RICIN, WHICH IS A DEADLY POISON DERIVED FROM CASTOR BEAN SEEDS. THIS TOXIN IS EASILY PREPARED, AND ALL OF THE MATERIALS NECESSARY TO PRODUCE IT, AS WELL AS THE INSTRUCTIONS FOR ITS PRODUCTION, WERE ACQUIRED FROM PUBLICLY AVAILABLE

SOURCES. THE FOUR INDIVIDUALS CONVICTED FOR PRODUCING THE RICIN ESPoused EXTREMIST, ANTI-GOVERNMENT, ANTI-TAX IDEALS, AND ADVOCATED THE VIOLENT OVERTHROW OF THE GOVERNMENT. THEY HAD SPECIFICALLY TARGETED A DEPUTY U.S. MARSHAL WHO HAD PREVIOUSLY SERVED PAPERS ON ONE OF THEM FOR TAX VIOLATIONS. TO CARRY OUT THE POISONING, THE SUBJECTS MIXED THE RICIN WITH A SOLVENT WHICH WOULD ALLOW ITS ABSORPTION INTO THE BLOODSTREAM. THEY CONSPIRED TO SMEAR THE RICIN MIXTURE ON THE DOOR HANDLES AND STEERING WHEEL OF THE MARSHAL'S CAR IN ORDER TO POISON HIM.

THIS CASE IS THE FIRST BIOLOGICAL WEAPONS INVESTIGATION BROUGHT TO TRIAL AND SUCCESSFULLY PROSECUTED UNDER THE BIOLOGICAL WEAPONS ANTI-TERRORISM ACT OF 1989 (BWAT ACT). THE FOUR SUBJECTS WERE FOUND GUILTY IN THE RICIN POISONING PLAN. THEY EACH RECEIVED PRISON SENTENCES RANGING BETWEEN 33 AND 48 MONTHS INCARCERATION, FOLLOWED BY THREE YEARS SUPERVISED RELEASE.

THERE IS A VALID CONCERN OVER THE RELATIVE EASE WITH WHICH BIOLOGICAL MATERIALS AND CHEMICAL PRECURSORS CAN BE OBTAINED. IN MAY 1995, AN INDIVIDUAL ACQUIRED THREE VIALS OF YERSINA PESTIS, THE ORGANISM WHICH CAUSES BUBONIC PLAGUE, FROM A BIOLOGICAL CULTURE LABORATORY. THE MATERIAL WAS RECOVERED, UNOPENED, BY LAW ENFORCEMENT OFFICIALS, AND THE INDIVIDUAL WAS ARRESTED AND CHARGED WITH FRAUD. IN JUNE, 1995, THE SUBJECT WAS INDICTED BY A FEDERAL GRAND JURY ON THREE COUNTS OF FRAUD BY WIRE FOR OPENING THE ACCOUNT BY PHONE, FAXING LETTERHEAD MEMO WITH A FRAUDULENT ENVIRONMENTAL PROTECTION AGENCY NUMBER AND ORDERING THE THREE VIALS; AND ONE COUNT OF MAIL FRAUD FOR ACQUIRING THE MATERIAL. THE SUBJECT IS CURRENTLY AWAITING SENTENCING PURSUANT TO A PLEA AGREEMENT. THIS INVESTIGATION INVOLVED CLOSE COORDINATION BETWEEN THE FBI, THE CENTER FOR DISEASE CONTROL, AND LOCAL AUTHORITIES.

ANOTHER INCIDENT INVOLVED A U.S. CITIZEN WHO WAS DETAINED BY A FOREIGN GOVERNMENT CUSTOMS SERVICE

AS HE ATTEMPTED TO ENTER THEIR COUNTRY. THE FOREIGN CUSTOMS SERVICE CONFISCATED A WHITE POWDERY SUBSTANCE, WHICH WAS LATER IDENTIFIED THROUGH LABORATORY ANALYSIS TO BE THE DEADLY TOXIN RICIN. UPON RECEIPT OF THIS INFORMATION IN MAY, 1995, THE FBI INITIATED AN INVESTIGATION. THE SUBJECT WAS SUBSEQUENTLY INDICTED AND ARRESTED FOR POSSESSION OF RICIN. THIS MATTER IS STILL PENDING AND THE INVESTIGATION IS CONTINUING.

TO DATE, THESE ARE THE ONLY CASES INVOLVING THE POTENTIAL USE OF BIOLOGICAL AGENTS THAT THE FBI HAS INVESTIGATED WHERE PROSECUTION HAS BEEN SOUGHT.

THE ONLY DOCUMENTED CASE OF A DOMESTIC GROUP POSSESSING A CHEMICAL AGENT OCCURRED IN 1985. THE FBI AND BUREAU OF ALCOHOL, TOBACCO, AND FIREARMS (ATF) CONDUCTED A JOINT INVESTIGATION ON A GROUP CALLED THE COVENANT, SWORD, AND ARM OF THE LAW (CSA). THE CSA WAS A WHITE-SUPREMACIST, ANTI-SEMITIC GROUP WHICH HAD A COMPOUND IN THE OZARK MOUNTAINS OF NORTH ARKANSAS. DURING THE SEARCH OF THE COMPOUND, A 35-GALLON

CONTAINER OF CYANIDE WAS RECOVERED. ALLEGEDLY, THE CSA MEMBERS PLANNED TO DUMP THE CYANIDE INTO THE WATER SUPPLY OF EITHER WASHINGTON, D.C. OR NEW YORK CITY. THE CYANIDE WAS NEVER USED.

A STUDY WAS CONDUCTED TO DETERMINE THE EFFECT OF 35 GALLONS OF CYANIDE ON THE WATER SYSTEM OF EITHER CITY. FORTUNATELY, THE RESULTS WERE THAT IT WOULD HAVE NO EFFECT.

PANEL II:FBI AND INTERAGENCY PLANNINGAND PROGRAM FOR RESPONSE TO URBAN TERRORISMEFFECT OF NEW POLICY/LEGISLATIONON LAW ENFORCEMENT ABILITY TO FIGHT C/B TERRORISM

STRENGTHENING EXISTING LAWS AND IMPLEMENTING NEW LEGISLATION CONCERNING C/B WEAPONS AND THEIR PRECURSORS WILL ENHANCE THE FBI'S INVESTIGATIVE POWER AND ITS ABILITY TO FIGHT C/B-RELATED TERRORISM. AS A RESULT OF THE AFOREMENTIONED CASE INVOLVING THE INDIVIDUAL WHO FRAUDULENTLY OBTAINED THE BUBONIC PLAGUE BACILLUS, THE DEPARTMENT OF JUSTICE HAS PROPOSED AMENDMENTS TO THE BIOLOGICAL WEAPONS ANTI-TERRORISM ACT (BWAT ACT) OF 1989 (TITLE 18 USC, SECTION 175).

THE PROPOSED AMENDMENT WOULD STRENGTHEN TITLE 18, USC SECTION 175, BY ADDING, THE THREAT TO USE, ATTEMPT TO USE, OR CONSPIRACY TO USE BIOLOGICAL WEAPONS OR AGENTS AS PROHIBITED ACTIVITIES UNDER THE

STATUTE. THESE AMENDMENTS WOULD EXPAND THE SITUATIONS UNDER WHICH THESE SECTIONS WOULD BECOME ENFORCEABLE, AND IMPLEMENT THE DEATH PENALTY WHERE VIOLATION OF THE ACT CAUSES DEATH.

IN ADDITION TO ACTIVELY PARTICIPATING IN DRAFTING THESE PROPOSALS, THE FBI IS CURRENTLY WORKING WITH THE DEPARTMENT OF JUSTICE ON AN INTERAGENCY TASK FORCE, INCLUDING AGENCIES OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES, THE DEPARTMENT OF DEFENSE, AND THE U.S. POSTAL SERVICE. THE TASK FORCE WAS CREATED TO PROPOSE LEGISLATION TO IMPLEMENT A REGISTRY AND STANDARDIZED PROCEDURES FOR THE ACQUISITION AND TRANSFER OF PATHOGENIC MATERIAL WITHIN THE UNITED STATES.

THE CHEMICAL WEAPONS CONVENTION (CWC) IS BOTH AN ARMS CONTROL AND NONPROLIFERATION TREATY. THE CWC BANS THE DEVELOPMENT, PRODUCTION, ACQUISITION, STOCKPILING, RETENTION, AND TRANSFER OF CHEMICAL WEAPONS. ALTHOUGH THE CWC WAS NOT DESIGNED TO PREVENT CHEMICAL TERRORISM, CERTAIN ASPECTS OF THE CONVENTION, INCLUDING ITS IMPLEMENTING LEGISLATION AND

NONPROLIFERATION PROVISIONS, WILL AUGMENT EXISTING LAW ENFORCEMENT EFFORTS TO FIGHT CHEMICAL TERRORISM. IMPLEMENTING LEGISLATION REQUIRED BY THE CWC WILL STRENGTHEN LEGAL AUTHORITY TO INVESTIGATE AND PROSECUTE VIOLATIONS OF THE TREATY AND RAISE THE LEVEL OF PUBLIC ALERTNESS TO THE THREAT AND ILLEGALITY OF CHEMICAL WEAPONS.

FOR EXAMPLE, THE PROPOSED U.S. IMPLEMENTING LEGISLATION CONTAINS THE CLEAREST, MOST COMPREHENSIVE AND INTERNATIONALLY RECOGNIZED DEFINITION OF A CHEMICAL WEAPON AVAILABLE. IT IS FAR MORE PRECISE THAN THE TERM "POISON GAS" CONTAINED IN TITLE 18 OF THE CRIMINAL CODE. THE DEFINITION CONTAINED IN THE IMPLEMENTING LEGISLATION WILL ENABLE AN INVESTIGATOR TO REQUEST A SEARCH WARRANT ON THE BASIS OF SUSPICION OF ILLEGAL CHEMICAL WEAPONS ACTIVITY (SUCH AS PRODUCTION OF A CHEMICAL WEAPONS AGENT), RATHER THAN SUSPICION OF CONSPIRACY TO COMMIT TERRORISM, AS UNDER CURRENT U.S. LAW. BY PROVIDING INVESTIGATORS AND PROSECUTORS A MORE PRECISE LEGAL BASIS FOR PURSUING THE DEVELOPMENT,

PRODUCTION, TRANSFER, OR ACQUISITION OF CHEMICAL WEAPONS, CWC IMPLEMENTING LEGISLATION IMPROVES PROSPECTS FOR DETECTION, EARLY INTERVENTION, AND POSSIBLY EVEN PREVENTION OF CHEMICAL TERRORISM IN THE UNITED STATES.

THE LEGISLATION TO IMPLEMENT THE CWC WOULD PROVIDE SEIZURE, FORFEITURE, AND DESTRUCTION AUTHORITY FOR CHEMICAL WEAPONS, SIMILAR TO THAT WHICH EXISTS FOR BIOLOGICAL WEAPONS UNDER THE BIOLOGICAL WEAPONS ANTI-TERRORISM ACT. THIS IMPORTANT PROVISION PROTECTS THE RIGHTS OF PROPERTY OWNERS WHILE ALLOWING LAW ENFORCEMENT OFFICIALS TO SEIZE AND DESTROY A CHEMICAL WEAPON UNDER EXIGENT CIRCUMSTANCES (I.E., WHERE HARM IS IMMINENT OR LIKELY). THIS PROVIDES AUTHORITY TO PREVENT A POTENTIAL CATASTROPHE AND SAVE LIVES. ALSO OF RELEVANCE, VIOLATION OF THE STATUTE IS PUNISHABLE BY FINES AND/OR IMPRISONMENT FOR LIFE OR ANY TERM OF YEARS.

IN ADDITION, TIPS BY CONCERNED PRIVATE CITIZENS ARE VITAL TO SUCCESSFUL POLICE INVESTIGATIONS.

ENACTMENT OF THE CWC AND ITS IMPLEMENTING LEGISLATION WILL ENSURE, DUE TO REPORTING AND INSPECTION REQUIREMENTS AND PENALTIES FOR VIOLATIONS, THAT PRIVATE COMPANIES AND CONCERNED CITIZENS ARE MORE ALERT AND MORE LIKELY TO REPORT ANY SUSPECTED CHEMICAL WEAPONS-RELATED ACTIVITIES.

NONPROLIFERATION PROVISIONS OF THE CWC WILL DENY TERRORISTS EASY ACCESS TO CHEMICAL WEAPONS BY REQUIRING PARTIES TO ELIMINATE NATIONAL STOCKPILES AND CONTROLLING TRANSFERS OF CERTAIN CHEMICALS THAT CAN BE USED TO MAKE CHEMICAL WEAPONS. IN PARTICULAR, THE CWC REQUIRES PARTIES TO CEASE TRANSFERS OF CERTAIN CW AGENTS AND CW PRECURSOR CHEMICALS TO NON-PARTIES AND RESTRICT SUCH TRANSFERS TO PARTIES. IN ADDITION, ADVANCE REPORTING IS REQUIRED ON ANTICIPATED PRODUCTION LEVELS OF ALL LISTED CHEMICALS AND ANTICIPATED IMPORTS AND EXPORTS OF SCHEDULE 1 AND 2 CHEMICALS. THESE MEASURES WILL HELP RESTRICT ACCESS TO KEY CHEMICALS, WHILE ALSO HELPING TO ALERT GOVERNMENTS AND LAW ENFORCEMENT OFFICIALS TO SUSPECTED ACTIVITIES].

PRESIDENTIAL DECISION DIRECTIVE (PDD)

IN JUNE, 1995, PRESIDENT CLINTON SIGNED A PRESIDENTIAL DECISION DIRECTIVE WHICH REAFFIRMED THE FBI'S LEAD LAW ENFORCEMENT AND CRISIS MANAGEMENT ROLE IN RESPONSE TO A DOMESTIC TERRORIST INCIDENT. WHILE THIS PDD ENCOMPASSES ALL ASPECTS OF THE U.S. GOVERNMENT ROLE IN COUNTERING TERRORISM, IT ALSO SPECIFICALLY ADDRESSES TERRORISM INVOLVING USE OF WEAPONS OF MASS DESTRUCTION (WMD). TO ENSURE THAT THE FULL RANGE OF NECESSARY EXPERTISE AND CAPABILITIES ARE AVAILABLE TO THE FBI IN RESPONSE TO A MAJOR DOMESTIC TERRORIST INCIDENT, INCLUDING ONE WHICH INVOLVES WMD, THE PDD MANDATES THAT APPROPRIATE FEDERAL AGENCIES WILL SUPPORT THE FBI BY PROVIDING PERSONNEL AND EQUIPMENT WHICH WILL BE RAPIDLY DEPLOYABLE AND MADE AVAILABLE FOR ADVICE OR ASSISTANCE, AS WARRANTED BY THE SITUATION AND AT THE REQUEST OF THE FBI ON-SCENE COMMANDER AT THE INCIDENT SITE.

PURSUANT TO THE PDD, THE FBI HAS INCREASED ITS INTERACTION WITH OTHER FEDERAL AGENCIES WHO HOLD A

ROLE IN RESPONDING TO A MAJOR TERRORIST OR WMD INCIDENT, EITHER IN SUPPORT OF THE FBI, OR FOR MANAGING THE CONSEQUENCES OF SUCH AN INCIDENT. A WMD TERRORIST INCIDENT INVOLVING NUCLEAR/RADIOLOGICAL OR CHEMICAL/BIOLOGICAL AGENTS OR WEAPONS WOULD RESULT IN THE FBI ACTIVATING ITS NUCLEAR INCIDENT CONTINGENCY PLAN OR ITS CHEMICAL/BIOLOGICAL INCIDENT CONTINGENCY PLAN. IN ADDITION TO FBI OPERATIONAL PLANS, THESE DOCUMENTS IDENTIFY FEDERAL INTERAGENCY SUPPORT WHICH IS NOW ALSO ENCOMPASSED BY THE DEST CONCEPT. THE PRIMARY AGENCIES WHO WOULD BE CALLED UPON FOR ASSISTANCE IN THE EVENT OF A MAJOR DOMESTIC TERRORIST OR WMD INCIDENT INCLUDE: THE DEPARTMENT OF DEFENSE; DEPARTMENT OF HEALTH AND HUMAN SERVICES, PUBLIC HEALTH SERVICE; THE DEPARTMENT OF ENERGY, THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA); AND THE ENVIRONMENTAL PROTECTION AGENCY.

CHEMICAL/BIOLOGICAL THREAT ASSESSMENT PROCESS

ON RECENT OCCASIONS, THE FBI HAS RESPONDED TO COMMUNICATED THREATS OF C/B TERRORIST ATTACKS. THE

FBI'S RESPONSIBILITY ENTAILS THE INITIATION OF THREAT CREDIBILITY ASSESSMENTS IN ACCORDANCE WITH GUIDELINES SET FORTH IN OUR CHEMICAL/BIOLOGICAL INCIDENT CONTINGENCY PLAN. AS WARRANTED, THE FBI DIRECTS OPERATIONAL RESPONSES. THE THREAT ASSESSMENT PROCESS ENTAILS CLOSE COORDINATION WITH OTHER ENTITIES OF THE U.S. GOVERNMENT WHICH POSSESS EXPERTISE IN C/B MATTERS, TO EXAMINE AVAILABLE INFORMATION ON THE THREAT AND DETERMINE ITS VIABILITY FROM A TECHNICAL, OPERATIONAL, AND BEHAVIORAL STANDPOINT. TO DATE, ALL OF THESE THREATS HAVE BEEN DETERMINED TO BE HOAXES.

ONE SUCH THREAT OCCURRED IN MAY, 1995, WHEN AN EMBASSY IN WASHINGTON, D.C. AND A BROADCASTING COMPANY EACH RECEIVED A LETTER MAILED FROM SAN DIEGO. THE LETTERS WERE SIMILAR IN FORMAT AND CONTENT AND ALLUDED TO THE RELEASE OF BIOLOGICAL AGENTS AT DIFFERENT LOCATIONS THROUGHOUT THE WORLD. THE LETTERS WERE EVALUATED ON A TECHNICAL, OPERATIONAL, AND BEHAVIORAL BASIS BY THE FBI AND OTHER ENTITIES OF THE U.S. GOVERNMENT. SUBSEQUENTLY, THE THREAT WAS EVALUATED

TO BE NOT CREDIBLE. PURSUANT TO INVESTIGATION BY THE SAN DIEGO FIELD OFFICE IN COORDINATION WITH THE FBI LABORATORY, THE AUTHOR OF THE LETTERS WAS IDENTIFIED, AND IN FACT HAD A HISTORY OF SENDING SUCH HOAX LETTERS DATING BACK TO THE LATE 1970'S.

IN APRIL, 1995, A VIDEO TAPE WAS DELIVERED TO THE SECURITY DEPARTMENT OF A LARGE PRIVATE COMPLEX, WHICH FORECASTED A POISON GAS ATTACK TO BE DISPERSED ON THE GROUNDS OF THE COMPLEX IN THE NEAR FUTURE. THE FBI OPENED AN INVESTIGATION OF THE THREAT AND IMMEDIATELY COORDINATED THE INTERAGENCY THREAT ASSESSMENT BASED ON THE VIDEOTAPE INFORMATION. IN ACCORDANCE WITH THE FBI'S CHEMICAL/BIOLOGICAL INCIDENT CONTINGENCY PLAN, AN INTERAGENCY TEAM OF SPECIALIZED ASSETS WAS DEPLOYED AND PREPOSITIONED NEAR THE ALLEGED INCIDENT SITE. FORTUNATELY, THE ATTACK DID NOT OCCUR. THE DEPLOYMENT DID HOWEVER, ILLUSTRATE THE EFFECTIVENESS OF THE FBI'S CHEMICAL/BIOLOGICAL INCIDENT CONTINGENCY PLAN IN MARSHALLING FEDERAL RESOURCES IN RESPONSE TO A C/B TERRORIST THREAT OR INCIDENT.

CRISIS MANAGEMENT/RESPONSE CAPABILITY:**THE CHEMICAL/BIOLOGICAL C/B INCIDENT CONTINGENCY PLAN**

THE FBI C/B INCIDENT CONTINGENCY PLAN, WHICH HAS BEEN IN EFFECT SINCE THE LATE 1980S, IS CONTINUALLY UPDATED AND REVISED, MOST RECENTLY, IN FEBRUARY, 1996. THE PLAN IS DESIGNED TO MARSHALL THE APPROPRIATE FEDERAL TACTICAL, TECHNICAL, SCIENTIFIC, AND MEDICAL SUPPORT TO BOLSTER THE FBI'S INVESTIGATIVE AND CRISIS MANAGEMENT ABILITIES, AND, IN PREPARATION FOR CONSEQUENCE MANAGEMENT, TO AUGMENT FEDERAL, STATE, AND LOCAL RESOURCES IN ADDRESSING A C/B INCIDENT. THE C/B INCIDENT CONTINGENCY PLAN COMPLEMENTS OUR NUCLEAR INCIDENT CONTINGENCY PLAN, WHICH WOULD BE IMPLEMENTED FOR NUCLEAR OR RADIOLOGICAL INCIDENTS. BOTH PLANS EMPHASIZE COORDINATION BETWEEN ALL PARTICIPANTS AND ARE PARTICULARLY CONCERNED WITH THE BRIDGE BETWEEN THE LAW ENFORCEMENT CRISIS MANAGEMENT ACTIVITIES AND THE CONSEQUENCE MANAGEMENT IMPLICATIONS OF THE CRISIS.

THE FIRST PRIORITIES ARE PUBLIC SAFETY AND THE PRESERVATION OF LIFE. IN A TERRORIST OR CRIMINAL-RELATED NBC INCIDENT, THE FBI WILL ASSUME THE LEAD INVESTIGATIVE AND CRISIS MANAGEMENT ROLE, IN CLOSE COORDINATION WITH LOCAL LAW ENFORCEMENT AUTHORITIES, TO SUCCESSFULLY RESOLVE THE INCIDENT.

BASED ON THE SPECIFIC DETAILS OF AN INCIDENT, LAW ENFORCEMENT RESPONSIBILITIES WILL BE RESOLVED OR IF NO LONGER THE MAIN PRIORITY, FEMA WILL ASSUME CONSEQUENCE MANAGEMENT RESPONSIBILITY FOR THE INCIDENT. THE FBI'S NBC INCIDENT CONTINGENCY PLANS AND DEST GUIDELINES CLARIFY AND ADDRESS THIS ISSUE AND PROVIDE GUIDANCE REGARDING THE FEDERAL MANAGEMENT TRANSITION FROM THE FBI TO FEMA IN THIS CONTEXT.

TRAINING INITIATIVES/PROACTIVE PROGRAMS

IN JUNE 1995, FBI HEADQUARTERS TASKED THE 56 DOMESTIC FBI FIELD OFFICES TO CONDUCT C/B TERRORISM EXERCISES IN EACH OF THEIR REGIONS IN ACCORDANCE WITH GUIDELINES SET FORTH IN THE C/B INCIDENT CONTINGENCY

PLAN. THIS INCLUDES COORDINATION AND PARTICIPATION BY OTHER PUBLIC SAFETY AGENCIES WHO WOULD BE INVOLVED IN A C/B INCIDENT; INCLUDING FIRST RESPONDERS, REGIONAL OFFICES OF SUPPORTING FEDERAL AGENCIES, AND STATE EMERGENCY MANAGEMENT AGENCIES WHO WOULD BE INVOLVED IN CONSEQUENCE MANAGEMENT AT SUCH AN INCIDENT. EACH OF THE 56 FIELD OFFICES HAS TAKEN ACTION IN RESPONSE TO THIS TASKING AND ARE IN THE PROCESS OF PLANNING AND CONDUCTING C/B EXERCISES. TO DATE, MORE THAN 30 OF THE FIELD OFFICES HAVE SCHEDULED OR COMPLETED C/B EXERCISES.

RECOGNIZING THE THREATS POSED TO OUR NATION'S SECURITY BY THE PROLIFERATION OF WEAPONS OF MASS DESTRUCTION, THE SENATE ADDED LANGUAGE TO THE NATIONAL DEFENSE AUTHORIZATION ACT (NDAA) FOR FY 1995 (PL 103-337) PROVIDING FOR THE OBLIGATION OF UP TO \$10 MILLION DOLLARS IN COUNTERPROLIFERATION TRAINING FUNDS FOR THE FBI AND THE DEPARTMENT OF DEFENSE (DOD) TO PROVIDE LAW ENFORCEMENT TRAINING TO THE BALTICS, THE STATES OF THE FORMER SOVIET UNION AND EASTERN EUROPE. A JOINT

FBI/DOD REPORT WITH INPUT FROM THE U.S. INTELLIGENCE AND LAW ENFORCEMENT COMMUNITIES WILL BE READY FOR SUBMISSION TO THE CONGRESS IN THE NEXT FEW WEEKS.

THIS TRAINING INITIATIVE WILL INCLUDE A MULTI-FACETED, MULTI-AGENCY APPROACH LEAD BY THE FBI AND THE DOD. THE DEPARTMENT OF STATE, DEPARTMENT OF ENERGY, U.S. CUSTOMS SERVICE, ALONG WITH OTHER U.S. LAW ENFORCEMENT AND REGULATORY AGENCIES AND THE INTELLIGENCE COMMUNITY WILL PROVIDE A UNIFIED U.S. GOVERNMENT APPROACH TO DETERRING THE NUCLEAR THREAT THROUGH LAW ENFORCEMENT TRAINING ABROAD. THE FBI BELIEVES THAT LAW ENFORCEMENT TRAINING PROGRAMS CANNOT BE LIMITED TO POLICE OFFICIALS ALONE. IDEALLY, TARGET GROUPS FOR THIS TRAINING WOULD INCLUDE, BUT NOT BE LIMITED TO, POLICE; INVESTIGATIVE MAGISTRATES OR PROSECUTORS; JUDGES; AND INTERIOR/JUSTICE OFFICIALS. SUCH TRAINING WILL FOCUS ON THIS BROAD AUDIENCE. IF IT IS SUCCESSFUL, FOREIGN LAW ENFORCEMENT OFFICIALS WILL HAVE THIS SKILLS AND AUTHORITY WHICH THEY REQUIRE TO

DEAL WITH WMD, PARTICULAR NUCLEAR TRAFFICKING AND OTHER SOPHISTICATED CRIMINAL ACTIVITIES.

ANOTHER TRAINING INITIATIVE BEING PLANNED BY FBI HEADQUARTERS IS A ONE-WEEK IN-SERVICE FOR FIELD OFFICE COMMAND AND SPECIAL AGENT INVESTIGATORS, TO BE HELD IN THE FALL OF 1996, ON NUCLEAR, BIOLOGICAL, AND CHEMICAL PROLIFERATION AND TERRORISM MATTERS.

IN PREPARATION FOR THE 1996 CENTENNIAL OLYMPIC GAMES, THE FBI HAS PLANNED A SERIES OF NBC COUNTERTERRORISM EXERCISES, INCLUDING TABLE-TOP, COMMAND POST, AND FULL-FIELD EXERCISES. TO DATE, THE TABLE-TOP AND COMMAND POST EXERCISES HAVE BEEN COMPLETED, AND THE FULL-FIELD EXERCISE IS SCHEDULED TO TAKE PLACE IN THE NEAR FUTURE. THIS FULL-FIELD EXERCISE WILL BE A THREE-DAY COMBINATION EXERCISE INVOLVING TABLE-TOP, COMMAND-POST, AND FULL FIELD PHASES.

IN ADDITION, THE FBI HAS ACTIVELY PARTICIPATED IN SEVERAL INTERAGENCY EXERCISES IN PREPARATION FOR THE OLYMPICS WHICH HAVE FOCUSED ON POSSIBLE TERRORIST INCIDENTS, AND INCLUDED NUCLEAR, BIOLOGICAL, AND

CHEMICAL SCENARIOS. THESE EXERCISES HAVE TAKEN PLACE IN ATLANTA AS WELL AS THE OTHER VENUE SITES HOSTING OLYMPIC EVENTS. THE FBI IS ALSO CO-CHAIR AND AN ACTIVE MEMBER OF AN INTERAGENCY PLANNING GROUP FOR EXERCISES.

CLOSING STATEMENT

THROUGH OUR INVESTIGATIONS AND ACTIVE COOPERATIVE EXCHANGES WITH THE LAW ENFORCEMENT AND INTELLIGENCE COMMUNITIES, THE FBI REMAINS ALERT FOR TERRORIST INTENTIONS TO ACQUIRE OR EMPLOY WEAPONS OF MASS DESTRUCTION. WE CONTINUE TO IMPROVE OUR CAPABILITIES TO RESPOND TO TERRORIST THREATS THROUGH ACTIVE COORDINATION WITH SUPPORTING FEDERAL AGENCIES. ADDITIONALLY, WE PROVIDE NUCLEAR, BIOLOGICAL, AND CHEMICAL-RELATED TRAINING FOR FBI PERSONNEL AND OTHER FEDERAL, STATE, AND LOCAL AGENCIES.

THE FBI, AS LEAD AGENCY FOR COUNTERTERRORISM IN THE UNITED STATES, CONTINUES TO AGGRESSIVELY PURSUE INTELLIGENCE COLLECTION, ANALYSIS, AND PROACTIVE

**PROGRAMS TO PREVENT A C/B TERRORIST INCIDENT. I WILL BE
GLAD TO ANSWER QUESTIONS FROM THE SUBCOMMITTEE.**

Mr. WELDON. Thank you, Mr. Blitzer, and I am sure we will have questions for you.

General Swain.

STATEMENT OF BRIG. GEN. THOMAS E. SWAIN, DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR POLICY AND MISSIONS

General SWAIN. Thank you, Mr. Chairman for this opportunity to discuss with you and the other members of the committee DOD's role in combatting terrorism. As I have indicated in my statement which has been submitted to you for the record, the Secretary of Defense has designated the Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict [SO/LIC] as the office responsible for DOD policy and oversight of combatting terrorism. My remarks will deal with combatting terrorism in general, but are inclusive of the chemical and biological arena.

Since its inception, SO/LIC has represented DOD as a key member of the U.S. Government's interagency counterterrorism effort. We routinely meet with our colleagues from the other Federal agencies to discuss, plan, and coordinate the U.S. Government response to terrorism. Within DOD, we break combatting terrorism into two parts: counterterrorism and antiterrorism. As the Secretary's combatting terrorism policy office, we are responsible for the oversight of the Defense Department's antiterrorism as well as its counterterrorism programs. In this regard, as an example of the DOD emphasis in this area and the interagency cooperation, SO/LIC and the joint staff serve as cochairs of the Secretary of Defense's antiterrorism task force, which is currently assessing the effectiveness of DOD's worldwide antiterrorist programs. This has been closely coordinated within the agency. This policy and operational assessment is being conducted in direct response to the Riyadh bombing incident of last November.

Since my colleague from the FBI has given you an overview of the Federal program for combatting terrorism in the chemical/biological arena, I will not repeat those remarks. However, I would like to emphasize that combatting terrorism cannot be conducted by any single Federal agency successfully. No single Federal agency has all of the authorities or the resources to effectively conduct the full range of operations often needed to deter, prevent, or resolve terrorists. Thus, our interagency approach, with lead Federal agencies and DOD playing a supporting role, has worked extremely well, particularly over the last 2 years.

Sir, this concludes my remarks, and I will be happy to answer any questions.

[The prepared statement of General Swain follows:]

STATEMENT BY
BRIGADIER GENERAL THOMAS E. SWAIN
DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR POLICY AND MISSIONS

BEFORE THE
SUBCOMMITTEE ON MILITARY RESEARCH AND DEVELOPMENT
OF
THE HOUSE NATIONAL SECURITY COMMITTEE

UNITED STATES HOUSE OF REPRESENTATIVES
104TH CONGRESS

MATTER OF THE CHEMICAL-BIOLOGICAL DEFENSE PROGRAM
AND RESPONSE TO URBAN TERRORISM

MARCH 12, 1996

NOT FOR PUBLICATION UNTIL
RELEASED BY THE SUBCOMMITTEE ON MILITARY RESEARCH AND DEVELOPMENT
OF THE HOUSE NATIONAL SECURITY COMMITTEE

March 8, 1996

Statement for the Record

Subcommittee on Military Research and Development
of the House National Security Committee

Chemical-Biological Defense Program and Response to Urban Terrorism

Office of the Secretary of Defense for Special Operations and Low-Intensity Conflict

March 12, 1996

Thank you, Mr. Chairman for this opportunity to discuss with you the Department of Defense's (DoD) role in Combating Terrorism and how it addresses the threat of chemical and biological weapons used by terrorists. As the Deputy Assistant Secretary of Defense for Policy and Missions, among my many duties, I serve as the Principal Military Assistant and advisor to the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict for policy and planning related to combatting terrorism. These hearings provide a positive step in educating the public on the nature of the threat and how the U.S. Government will respond. I would like to organize my remarks in the following manner: first, to address the reality of the threat; second, to give a general overview of DoD's Combating Terrorism program; and finally to discuss the specific measures DoD is taking toward countering the potential use of chemical and biological weapons by terrorists.

I am sure you have read articles on the low cost, easy availability of components, low technical skills requirement, and difficulty in detecting chemical and biological weapons. Certainly, a dedicated effort by a terrorist organization could possibly lead to the "catastrophic scenario" depicted by many experts. The Aum Shinrikyo chemical attacks dramatically demonstrated the reality of this worst-case scenario. There is no denying that the threat is "real" and that DoD, and all Federal agencies, must treat chemical and biological weapons use as a very serious and potentially catastrophic possibility.

However, we should not let ourselves exaggerate the nature of the threat. The ability to create mass casualties by using chemical and biological weapons depends on many factors. Finding the right agent, weaponizing the agent, delivering the agent in an effective manner, and waiting for the optimal meteorological conditions would be a challenge to any terrorist group. We just need to keep in perspective the reality of recent and potential events.

One of the tougher issues is the psychological fear of a chemical or biological attack. The anxiety generated by such an attack may pose far more difficult problems than the physical threat itself. The public must be made aware that chemical and biological agents have many limitations and can be protected against by several methods. These agents present difficult challenges, but the U.S. Government is working hard to deter, prevent, and/or minimize the

effects and provide effective consequence management. We believe with proper planning, coordination, focused research and development, and intelligence support, the U.S. Government can respond to this threat.

DoD's Combating Terrorism program is part of a coordinated United States Government interagency team response. No single federal agency possesses the authorities, response mechanisms and capabilities to effectively deter and resolve terrorist incidents. The U.S. Government program is based on a "lead agency" concept with the Department of State exercising lead agency responsibility overseas and the Department of Justice exercising lead agency responsibility for domestic incidents. The Department of Defense provides a significant supporting role to the lead federal agency.

Overseas, working with the State Department, DoD plays a vital role from initial planning through implementation of a wide range of overseas activities to include military to military cooperation, assistance, training, and joint exercises. Under the lead of the Department of Justice and the FBI, DoD works closely with its domestic counterparts, not only to provide cooperation or assistance permitted under law but also to ensure that DoD personnel and facilities are protected against any possible terrorist threat.

The Department of Defense is mandated by law, executive order, and National Security Directives, (the most recent being the Presidential Decision Directive/NSC-39), to have an effective Combating Terrorism Program. In November 1988, the Secretary of Defense designated the Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict [OASD(SO/LIC)] as the office responsible for DoD policy and oversight on combatting terrorism. Since its inception, SO/LIC has represented DoD as a key member of the U.S. Government's interagency counterterrorism effort. We routinely meet with our colleagues from the other federal agencies (several of whom are represented on this panel) to discuss, plan, and coordinate the U.S. Government response to terrorism. This interagency combatting terrorism team has been in existence since the mid-1980s.

We, in DoD, divide Combating Terrorism into two components, Antiterrorism (AT) and Counterterrorism (CT). Antiterrorism means the defensive measures employed to protect personnel and facilities against a terrorist incident. Conversely, counterterrorism refers to our offensive capabilities.

It is DoD policy to protect its personnel, their family members, facilities, and equipment from terrorist acts. Toward that end, DoD routinely budgets for security at military installations and DoD Dependent schools. To assist in the AT effort, OASD(SO/LIC) published DoD O-2000.12 (DoD Combating Terrorism Program) in August 1990. This directive assigns specific responsibilities to various DoD elements for briefing personnel on any known or suspected terrorist threats and informing them of security measures to be taken, as well as, ensuring prompt dissemination of intelligence information (to those charged with security responsibilities) on terrorist threats, including specific warning of threats against DoD personnel and their family members.

Additionally, OASD(SO/LIC) published DoD O-2000.12-H (Protection of DoD Personnel and Activities Against Acts of Terrorism and Political Turbulence) in February 1993, a

handbook that serves as a comprehensive reference book for all DoD components on antiterrorism awareness, education, and training activities.

To highlight AT awareness and importance, OASD(SO/LIC) sponsors an annual DoD Worldwide Antiterrorism Conference which serves as a forum for DoD and other U.S. Government antiterrorism specialists from throughout the United States and abroad to identify key issues and to reach consensus on possible solutions. The ASD(SO/LIC) also established an awards program in 1993 to recognize and praise those who work quietly behind the scenes to protect DoD personnel and installations; sensitize U.S. military members and their families to the nature and dangers of terrorism; and deter and prevent terrorist acts.

DoD also provides antiterrorism training. In this regard, DoD complements the Department of State's program for Antiterrorism Training Assistance by providing training to foreign military counterparts which may take the form of small unit exchanges or participation in joint training and exercises. A detailed accounting of the training that is provided to foreign governments is discussed in the DoD portion of State Department's Annual Antiterrorism Report to the Congress. This classified report is mandated under provisions of the Omnibus Diplomatic Security and Antiterrorism Act of 1986.

DoD also works routinely with the Department of State in distributing travel advisories for DoD members and families. DoD follows the U.S. Government policy on "no double standard" regarding availability of threat information. This dictates that American Government officials cannot benefit from receipt of information which might equally apply to the public but is not available to the public.

The second part of the Defense Department's Combating Terrorism program is Counterterrorism. This includes Defense Department support for U.S. policy to deter, defeat, and respond vigorously to all terrorists attacks against U.S. interests wherever they may occur. DoD supports the initiatives of the lead agencies in carrying out U.S. counterterrorism policy. For example, our office supports the State Department's Coordinator for Counter Terrorism in consultations with foreign governments, the deployment of Emergency Support Teams at the request of an American Ambassador to assist the host government, and the Department of Justice in the extradition or rendition of terrorist suspects. DoD also largely funds the Technical Support Working Group responsible for the research and development of CT technologies.

While it is DoD's policy not to discuss the capabilities, designations, missions and locations of DoD counterterrorism special units in a public forum, I would like, however, to briefly outline how DoD responds to a terrorist incident. During such an incident, the ASD(SO/LIC) has two primary roles. He is the Secretary's principal civilian advisor. He also serves as the Secretary's representative to the interagency crisis coordinating body, which will handle the counterterrorism response. The Joint Staff provides a representative as well. The ASD(SO/LIC) provides policy advice while the Joint Staff representative provides operational comment and advice.

USG counterterrorism response capabilities are routinely exercised from the tactical to the national level. DoD special mission units frequently train and exercise with foreign CT units. Whether supporting lead agency efforts or receiving assistance which enhances tactical capabilities from other government agencies, DoD is an integral part of a well organized and

functional U.S. counterterrorism community.

Looking specifically at how we would manage a terrorist incident involving either a chemical or biological weapon, it is important to note that the interagency combatting terrorism community has separated the two threats. The interagency community recognized long ago that while chemical and biological agents may have some common points, the production means, delivery vehicle, countermeasures, and expertise were based on completely different criteria. Clearly, in any effort to resolve a terrorist incident, we would want to rely on expertise most familiar with the specific threat. Therefore, to eliminate confusion and to focus our efforts, we elected to treat them as separate and distinct threats. Should a chemical or biological threat occur, DoD can respond with special mission units and response teams, provide specialized laboratories, and assist with consequence management assets tailored to meet the individual incident.

Finally, looking at what steps we are currently taking to handle chemical and biological incidents and prevent the proliferation of such weapons, there are a number of efforts that should be highlighted. Within the combatting terrorism program, DoD is conducting a series of senior level interagency tabletop exercises focused on weapons of mass destruction. The next exercise will deal in large measure with biological weapons in a domestic scenario aimed toward security preparations for the 1996 Atlanta Olympics. DoD is refining the process through which it will provide military assistance to civil authorities to encompass procedures specifically designed to handle weapons of mass destruction in a domestic scenario. The interagency CT community is also refining its procedures to include consequence management in weapons of mass destruction incident resolution. The inclusion of FEMA and the Public Health Service in the crisis and consequence management of terrorist WMD events is a critical and important new step by the interagency community.

Another program within the interagency CT community is the Technical Support Working Group (TSWG) which provides fast-track research and development of CT equipment. The TSWG is currently engaged in six projects aimed specifically at enhancing response capability for a chemical or biological incident. Recently, we began a review of all TSWG projects to ascertain if accelerating any of these projects with additional funding could bring equipment on-line more quickly for use by our response units.

A key area where DoD is making progress in fighting chemical and biological weapons is in detection technology. There are systems currently fielded or in production for conventional military missions which may support counterterrorism efforts as well. Some of these systems can monitor surface chemical contamination. Other detectors are under development for chemical detection in a specific environment. A good example is the aircraft interior detector-designed to detect, identify, and warn of low levels of nerve or blister agents in vapor form. This system could be used in subway stations. Similar capabilities are being developed for biological agents. There are also integration systems designed to link point detectors as a network so that contamination occurring at multiple sites can be detected at a central location. The Marine Corps is looking at software packages designed to incorporate detection and meteorological information to track the dispersal of chemical contaminations. This system may be used at the 1996 Atlanta Olympics. DoD is also investigating new technology for individual protection (new suits and accessories) as well as decontaminants, post-exposure medications, and vaccines.

We are working closely with other nations on a bilateral and multilateral basis to prevent the proliferation of weapons of mass destruction. U.S. Government Policy is directed toward stemming chemical and biological weapons proliferation. We are making progress in identifying key precursors to program development of these weapons, and using those precursors to establish databases to monitor, deter, and, if necessary, take action against those states or groups involved in chemical or biological weapons development. The President has issued three recent Decision Directives on nonproliferation, nuclear safety, and counterterrorism designed to increase U.S. Government efforts toward preventing proliferation.

There are several treaties dealing with chemical and biological weapons, the transfer of critical technology (such as missile technology), and the strict control of products which are specifically needed to build such programs. Within the interagency CT community, we have agreements with friendly nations to jointly develop equipment for combatting terrorism. Some of these efforts are aimed at the chemical and biological threat. Additionally, the interagency community is making every effort to enlist the aid of our allies and other nations to coordinate response capabilities for incidents involving weapons of mass destruction.

Mr. Chairman, we are confident of our ability to respond quickly to terrorist acts. There remain many technical challenges in responding to the use of chemical and biological weapons and I assure you that the interagency CT community is working hard each day to solve those challenges. We are committed to working closely with you to see that the American people are protected against the menace of international terrorism wherever and whenever it may arise.

Mr. WELDON. Thank you, General Swain.
Mr. Hollister.

STATEMENT OF G. CLAY HOLLISTER, DEPUTY ASSOCIATE DIRECTOR, RESPONSE AND RECOVERY DIRECTORATE, FEDERAL EMERGENCY MANAGEMENT AGENCY

Mr. HOLLISTER. Thank you, Mr. Chairman, members of the committee. I am pleased to appear before you today to discuss the role of FEMA in responding to the consequences of a terrorist incident in the United States. FEMA's role is primarily in the management of the consequences of our Nation's disasters and emergencies. This includes a terrorist event. FEMA is the coordinator of the Federal resources that can be used to assist State and local government, reduce the loss of life, damage to property from all hazards. FEMA provides four key elements: first, a management structure for multiagency coordination; second, a funding source: the Disaster Relief Fund; third, authority to task other Federal departments and agencies; and fourth, an established working relationship with State and local emergency managers.

What FEMA provides for the consequences of a terrorist event is essentially what we provide for the consequences of disasters and emergencies generally. We do this through a management structure which exists from our headquarters down to our field elements. It is called the Federal Response Plan. Through the Federal Response Plan, 28 Federal departments and agencies as well as the American Red Cross work together to facilitate the timely coordination and application of all Federal resources, including those of the Department of Defense, in response to all hazards. FEMA and the member agencies of the Federal Response Plan bring their own programs and their own special areas of expertise to each response operation. FEMA is the coordinator. As the coordinator, we do not duplicate the expertise that lies within our member agencies, such as EPA or DOE or, of course, Defense.

The Federal Response Plan is not a theory; it is not a theoretical tool. Federal departments and agencies have used this successfully for responding to the Northridge earthquake disaster; the great Midwest floods of 1993; the Oklahoma City bombing; hurricanes Marilyn and Opal and over 100 other disasters and emergencies since the plan was signed in 1992. It is a system that has a proven track record. It works and it is understood at the Federal, State, and local levels.

Four Federal agencies would play key roles in any response to a terrorist incident: the Department of Health and Human Services Public Health Service is the lead Federal agency under the response plan for health, medical and medical-related services. Both through its agency-specific missions and those of the support agencies in the Federal Response Plan, the Public Health Service would bring extensive capabilities to bear on such an incident. These would include, among other assets, the capabilities in their Disaster Medical Assistance Teams, their Disaster Mortuary Assistance Teams, of course the Centers for Disease Control, and in coordination with the Department of Veterans Affairs, their hospital system.

The other agency is the Environmental Protection Agency, which would lead decontamination activities if the terrorist incident involved chemical or nerve agents. EPA would provide an on-scene coordinator as well as specialized capable units from the agency's Environmental Response Team. The Department of Energy would provide Federal monitoring and assessment capabilities if it was a nuclear event, and the Department of Defense would and does provide a critical supporting role to our entire Federal effort. The Army could activate its Technical Escort Unit. DOD could provide support personnel and equipment for chemical and biological detection and decontamination. In conjunction with the Public Health Service and the Department of Veterans Affairs, DOD could provide medical assistance to victims of any type of terrorist incident, and the military's transportation would certainly be called upon for patient evacuation or the transport in or out of other assets to the scene.

Unfortunately, on April 19, 1995, we had the first requirement to implement the Federal Response Plan in a terrorist event. This was at the Oklahoma City bombing site. As horrible as this situation was, this event demonstrated that we, Federal agencies, can provide a coordinated effective response. The Federal Bureau of Investigation, under its own authorities, was responsible for pursuing criminal matters related to the incident. The FBI is the lead Federal agency for crisis management.

FEMA and the Federal response agencies executed responsibilities associated with consequence management. Using the structure of the Federal Response Plan, we coordinated the response operations of 24 non-law enforcement agencies, principally the Public Health Service, GSA, the Department of Defense, Corps of Engineers, and the Red Cross. We learned much from the Oklahoma City incident, and we have learned also a lot from past exercises. Some of the ongoing activities we have now to improve our response capability in consequence management are as follows: the President has directed FEMA and the Federal Response Plan agencies to assess the adequacy of the Federal Response Plan for a nuclear, biological, and chemical-related terrorist event. This assessment is ongoing right now and will include specific assessments of such areas as the stockpile of antidotes and other medicines, the capabilities of the National Disaster Medical System, procedures for direct Department of Defense support for medical facilities, and other similar issues with the various member agencies.

This report is due to the President in July 1996, this July. We are developing with the FBI primarily an annex for terrorism for the Federal Response Plan. It is being tested now in various exercises, and it, too, will be done in July 1996. We work regularly with the Public Health Service and support their initiatives, particularly their proposed chemical and biological rapid deployment teams and their proposed Metro Medical Strike Teams. We consider these critical assets to provide local response capability in such an event.

FEMA is providing a number of technical assistance and guidance to States and local governments. Some of these areas I will just highlight. They are in detail in my submitted testimony. One is a data base which can reside on portable computers to provide a first-responder with information on more than 200 chemical and

biological agents and compounds. This is being field-tested in various cities now. We are going to establish with the National Governors' Association three or four forums for senior State staff on the terrorism threat and the roles and responsibilities of State government.

We held on November 6-9 a joint conference with the International Association of Fire Chiefs. We had 75 fire chiefs in from the largest fire departments as well as representatives from European and Japanese fire departments. The subject was lessons learned from recent terrorist events here and abroad. The reports of this conference have been recently published, and they will be used by the National Fire Academy to develop a course on this subject.

We will also be doing an assessment of State and local preparedness in this arena. This will be done as part of our overall hazard assessment, working through the state emergency management offices and the metro fire chiefs. We have a number of courses that are taught in our emergency management institute in this arena. One is the IEMC—integrated emergency management—course. We have just given two of these to the officials in Atlanta in preparation for the Olympic games. And, of course, we participate in the exercises of the FBI and DOD in this arena. In 1997, FEMA will sponsor its own exercise, which will deal with the transition from crisis management to consequence management.

In conclusion, we do have an agreed-upon mechanism to respond, the Federal Response Plan. This plan has been tested in catastrophic disasters as we know them today, and the President has directed an indepth assessment of that plan relative to the consequences of a terrorist event. We will probably find—and I know the fire chief here with us will, I am sure, say this—that our ability to deal at the local level with biological weapons is poor; that local governments are first responders in this event; they are not trained and equipped to deal with unknown nuclear, biological, and chemical issues; and that assessments are needed; medical and logistic support will be needed.

FEMA will continue to work at an accelerated pace with the FBI and our other agencies and the volunteer agencies to identify our shortfalls. Thank you very much.

[The prepared statement of Mr. Hollister follows:]

STATEMENT OF
G. CLAY HOLLISTER
DEPUTY ASSOCIATE DIRECTOR
RESPONSE AND RECOVERY DIRECTORATE
FEDERAL EMERGENCY MANAGEMENT AGENCY
BEFORE THE
NATIONAL SECURITY COMMITTEE
UNITED STATES HOUSE OF REPRESENTATIVES

MARCH 12, 1996

Mr. Chairman and Members of the Committee:

I am pleased to appear before you today to discuss the role of the Federal Emergency Management Agency in responding to the consequences of a terrorist incident in the United States that involves a weapon of mass destruction.

I am G. Clay Hollister, Deputy Associate Director for Response and Recovery with the Federal Emergency Management Agency.

INTRODUCTION

- The Federal Emergency Management Agency, or FEMA, is the central coordinating agency for emergency management in the Federal government. FEMA is charged with establishing Federal policies for and coordinating the emergency planning, management, mitigation and assistance functions of the Executive agencies of the Federal government.
- Interagency emergency planning and experience over the years has established a significant base of capability at the local, State and Federal levels of government for responding to natural and technological disasters, including those involving nuclear and chemical materials. However, we realize that while there is a baseline capability there also is an extraordinary challenge associated with an effective response to an intentional nuclear, biological, or chemical disaster. The potential magnitude, the public fear, and the myriad of simultaneous response operations that would be required constitute a formidable management responsibility. The marriage of traditional consequence management with both law enforcement and highly technical scientific and medical response is new ground on which we are making deliberate and significant progress.

THE FEDERAL RESPONSE PLAN

- FEMA's role is in the management of the consequences of our nation's disasters and emergencies. This includes terrorist events. FEMA is the coordinator of the Federal resources that can be used to assist State and local

governments in carrying out their responsibilities to reduce the loss of life and damage to property from all hazards.

- FEMA provides the management structure for consequence management, a funding source in the Disaster Relief Fund, authority to task other Federal departments and agencies, and an established relationship with State and local emergency managers. What FEMA provides for the consequences of a terrorist event is, essentially, what we provide for all other emergencies and disasters.
- Consequence management includes measures to restore essential government services, protect public health and safety, and provide emergency assistance to affected governments, businesses, and individuals.
 - We do this through a management structure which extends from headquarters to the field. The mechanism for this is the **Federal Response Plan (FRP)**.
 - Through the Federal Response Plan and with FEMA leadership, 28 Federal departments and agencies as well as the American Red Cross and national voluntary agencies work together to facilitate the timely coordination and application of all Federal resources, including those of the Department of Defense, in response to all hazards.
 - FEMA provides the management structure in the Federal Response Plan.
 - FEMA and the member agencies of the Federal Response Plan bring their own programs and special areas of expertise to each response operation. FEMA, as the coordinator, does not duplicate the expertise that lies with the member agencies of the Federal Response Plan, such as the Environmental Protection Agency, the Public Health Service of the Department of Health and Human Services, the Department of Energy and the Department of Defense; nor does it replicate services

that are available through voluntary agencies, such as the American Red Cross.

- The Federal departments and agencies successfully used the Federal Response Plan for the Northridge Earthquake disaster, the Great Midwest Floods of 1993, the Oklahoma City Bombing, Hurricanes Marilyn and Opal, and over 100 other Federal disasters and emergencies since the Plan was signed in 1992. It is a system that has a proven track record, and one which works and is understood at the Federal, State and local levels of government.
- The Federal Response Plan is built on the principle of functionality.
 - We have identified the twelve primary areas in which Federal support may be necessary in a disaster operation.
 - Each of these twelve support functions is arranged with a lead Federal department or agency to coordinate operations within that area of expertise.

- Federal resources are grouped into 12 Emergency Support Functions. Each is headed by a primary agency. For example:

FUNCTION	LEAD AGENCY
Transportation	DOT
Communications	NCS
Public Works and Engineering	DOD, Army Corps of Engineers
Firefighting	USDA, Forest Service
Information and Planning	FEMA
Mass Care	American Red Cross
Resource Support	GSA
Health and Medical Services	DHHS, Public Health Service
Urban Search and Rescue	FEMA
Hazardous Materials	EPA
Food	USDA, Food and Nutrition Service
Energy	DOE

- In addition, I think that it is important to note the unique and critical role played by the Department of Defense under the Federal Response Plan. With its expertise, and ability to mobilize a wide variety of resources rapidly, Department of Defense provides highly important support to all functional areas under the Plan.
- This response mechanism is not theoretical. It is functionally effective and efficient. Within the framework of the Federal Response Plan, FEMA and the other Federal departments and agencies have already gained a great deal of valuable experience through dealing with a wide range of emergencies and disasters. We work very hard to incorporate the insight we gain from our experience in our consequence management planning and preparedness efforts.

HOW WE WOULD RESPOND TODAY

- I would like to spend a few minutes on the actual process of how we would respond if an event were to occur today.
- In a terrorist incident the Federal Bureau of Investigation (FBI) under its own authorities, would be responsible for pursuing criminal matters related to the incident. By the direction of the President, **the FBI is the lead Agency for crisis management**. Crisis management involves all the measures to confirm the threat, investigate, gather evidence, locate and capture the terrorists and their weapons, and prosecute the terrorists under Federal law.
- Also by direction of the President, **FEMA is the lead Agency for consequence management** of a terrorist event. Consequence management involves coordinating the use of Federal assets and providing a focal point for voluntary organizations in support of the affected community.
- Both crisis management and consequence management are supported by the technical assessments, counsel, and potential deployment and operation of all appropriate Federal departments and agencies.

- With this in mind, the following would be the actions taken, many concurrently, in response to a terrorist incident that occurred with no warning:
 - As in any emergency, the primary initial response would come from local emergency services personnel who will respond to provide medical, fire, and law enforcement assistance and assess the nature of what has occurred.
 - State and local emergency management organizations would activate their emergency plans and procedures to respond to the consequences of the event.
 - The FEMA Director would consult with the Governor of the affected State to determine the scope and extent of the incident and the nature of support required.
 - FEMA would utilize its emergency authorities to notify the Federal departments and agencies, activate the Federal Response Plan elements, begin coordinating the delivery of Federal assistance, establish liaison operations with the FBI at headquarters and in the field, and establish liaison with the State and affected local governments.
 - Concurrently, the President, under the authority of the Robert T. Stafford Emergency Assistance and Disaster Relief Act, would declare an emergency or major disaster and designate a Federal Coordinating Officer (FCO) to coordinate Federal consequence management operations;
 - As soon as there is sufficient information to act upon, there would be a deployment of the rapid response teams managed by FEMA and the other departments and agencies. These teams are rostered and ready to deploy on notice. The teams managed by FEMA include the national

Emergency Response Team (that will establish a Disaster Field Office and manage the Federal involvement in consequence management), the Initial Response Resources with its logistics support, the Mobile Emergency Response Support detachments with their communications and power generation equipment and additional logistics support, and the Urban Search and Rescue Teams.

- We would quickly establish a joint information center and begin providing essential emergency information to the public.
- Four Federal agencies would play key roles in any response to a terrorist incident:
 - The **Department of Health and Human Services, Public Health Service**, through both its agency specific missions and as the lead agency under the Federal Response Plan for health, medical, and health-related social services and organizations, would bring extensive capabilities for patient care, disease prevention and control, and management of the health consequences of environmental contamination. This would include the capabilities resident in the Disaster Medical Assistance and Disaster Mortuary Assistance Teams.
 - The **Environmental Protection Agency**, among other technical functions, would lead decontamination activities if the terrorist incident involved chemical or nerve agents.
 - ** In the event of a terrorist act involving chemicals, an Environmental Protection Agency On-Scene Coordinator could be deployed to supplement local government response efforts, and help determine the nature, scope, and magnitude of any chemical contamination.

- ** The Environmental Protection Agency On-Scene Coordinator would request assistance from specialized units within the Environmental Protection Agency, such as the Agency's Environmental Response Team, and would begin coordination with other National Response Team agencies, such as the Department of Defense and the Public Health Service of the Department of Health and Human Services.
- The Department of Energy, among other technical functions, would provide Federal monitoring and assessment capabilities in a nuclear event.
- The Department of Defense would provide a critical supporting role to the entire Federal effort.
- ** The Army could activate its Technical Escort Unit to conduct reconnaissance of the incident site, and assist with recovery, sampling, and disposal operations of chemical and biological material;
- ** The Department of Defense could provide support personnel and equipment for chemical and biological detection and decontamination;
- ** In conjunction with the Public Health Service and the Department of Veterans Affairs, it could provide medical assistance to victims of any type of terrorist incident;
- ** Also, the military's transportation resources would be called upon for patient evacuation and transportation.
- In the event of a warning of a credible threat, FEMA would be notified by the FBI and would exchange liaison personnel at headquarters and at the location.

- At the FBI's request, FEMA and selected other Federal agencies (e.g., the Department of Defense, the Department of Energy, the Public Health Service of the Department of Health and Human Services, and the Environmental Protection Agency) would join the FBI threat assessment team and advise the FBI on areas within their expertise.
- As appropriate and as coordinated with the FBI, FEMA would notify Federal Response Plan agencies and begin planning for the management of potential consequences of the specific situation, including consideration of pre-deployment of selected essential Federal assets.
- In coordination with the FBI, FEMA would coordinate anticipated needs with the State Governor and State Emergency Director.

THE OKLAHOMA CITY BOMBING

- Unfortunately, on April 19, 1995, we had the first requirement to implement the Federal Response Plan for an actual terrorist incident at the Alfred P. Murrah Federal Building in Oklahoma City, Oklahoma.
- As horrible as this situation was, this event demonstrated that we, the Federal agencies, can rapidly provide a coordinated and effective response.
- In what follows, please understand that I am describing Federal response activities. The true "first responders" were the Oklahoma City Fire Department, Emergency Medical Services, and Police.

THE FIRST DAY

- When the explosion occurred at 9:02 a.m. on April 19, our initial consultation and Federal Response Plan procedures were immediately activated by FEMA Director James L. Witt.

- Within an hour after the blast, FEMA dispatched a liaison to the Oklahoma City Emergency Operations Center to begin coordinating with the State and local officials, and the Federal Response Plan agencies were alerted.
- We sent a liaison to the FBI Operations Center to begin coordination activities.
- By 4:00 p.m. that afternoon, FEMA Director Witt was en route with a senior management team to coordinate response activities.
- At approximately 5:15 p.m., the President had declared an emergency under Title V of the Stafford Act.
- The appropriate Federal departments and agencies mobilized immediately under both their own and FEMA authorities to assemble a constellation of capabilities to support the State of Oklahoma. Under the Federal Response Plan, FEMA activated eight of the twelve Emergency Support Functions:
 - #2 (communications)
 - #3 (public works and engineering)
 - #4 (firefighting)
 - #5 (information and planning)
 - #6 (mass care)
 - #7 (resource support)
 - #8 (health and medical services)
 - #9 (urban search and rescue)
- FEMA's Mobile Emergency Response Support detachment from Denton, Texas, arrived on-site at 7:52 p.m. to provide critical communications, logistics, and life support to the operations at hand. This proved critical to the establishment of joint operations in the field.
- And using airframes provided by the Department of Defense, at 7:26 p.m. and 9:24 p.m. that same day, respectively, the first two FEMA Urban Search and Rescue Task Forces (Phoenix and Sacramento) were deployed to Oklahoma City to begin sorting through the rubble

searching for victims of the blast. We eventually deployed 11 Urban Search and Rescue Task Forces.

- All of this activity occurred on the first day of this crisis.

ON-GOING RESPONSE

- The Federal Bureau of Investigation, under its own authorities, was responsible for pursuing criminal matters related to the incident. FEMA and the Federal Response Plan agencies executed the responsibilities associated with consequence management. As a result of these different responsibilities, FEMA and the FBI coordinated closely, both at headquarters and in the field.
- Using the structure of the Federal Response Plan, FEMA coordinated the response operations of 24 other non-law enforcement Federal departments and agencies — over 2,000 personnel on-scene — in this event.
 - Among those responders:
 - ** The Department of Defense, U.S. Army Corps of Engineers assisted with debris removal, offered air transportation for personnel and resources to and from the disaster area, and provided structural engineers to monitor the stability of the Federal Building;
 - ** The American Red Cross provided food, shelters, mental health services, and other mass care needs to support both victims and emergency responders;
 - ** The Public Health Service was instrumental in this operation by activating a Disaster Mortuary Assistance Team to assist with victim identification. The Public Health Service also provided crisis counseling services, and monitored conditions on-scene to ensure emergency workers were protected from disease and other medical hazards;

- ** The Small Business Administration provided disaster loan applications to affected individuals and businesses so that they could obtain the funds needed to recover from this horrible event; and
- ** The General Services Administration was able to rapidly meet resource needs on-site, and identified alternate work locations for many of the Federal offices that were damaged or destroyed.
- This list stands as only a small sample of what was done at the Federal level to respond to the consequences of the Oklahoma City bombing. We demonstrated that our plans worked, and our efforts to coordinate an effective response were successful.

Activities to Improve Federal Preparedness for Terrorist Consequence Management

- Preparedness for terrorism is not a challenge for just the Federal government. It is a national problem which requires full national partnership and cooperation. At FEMA, we have emphasized the importance of additional planning, training, and practice for all levels of government so that that will better prepared for the awful consequences of a terrorist act.
- A Terrorism Annex to the Federal Response Plan was written to define the relationship of the Federal Response Plan to other existing interagency plans in which terrorism is involved. It defines the responsibilities and relationships among the responding agencies and defines the mechanism for coordination between crisis management and consequence management operations. The draft annex is being tested and refined in current exercises.
- The President directed FEMA, with appropriate Federal Response Plan agencies, to report on the status of efforts to achieve an adequate response capability for nuclear, biological, and chemical (NBC)-related terrorism incidents. That assessment will include specific assessments of: stockpile of

antidotes and other medicines; the National Disaster Medical System, and procedures for direct Department of Defense support for medical facilities and decontamination. The full report is due to the President in July 1996.

- We continue to work with and support the Public Health Service of the Department of Health and Human Services in its very challenging job of preparing to lead the health and medical response to nuclear, biological, and chemical threats. In our view the Public Health Service-led planning for the interagency health and medical response operation constitutes a significant improvement in the Federal Response Plan. We also believe that the proposed Chemical/Biological Rapid Deployment Teams and the proposed Metro Medical Strike Teams, when funded and constituted, would constitute a significant asset in major metropolitan areas for medical management and public health consequence response. We are especially encouraged with the progress to date for a Washington Metropolitan Area Medical Strike Team.
- We meet frequently with the FBI to complete the draft Annex to the Federal operations in general and, in particular, for the upcoming Olympic Games in Atlanta, Georgia.
- FEMA is providing a wide variety of technical assistance and guidance to State and local governments for terrorism consequence management. This includes:
 - The Chemical and Biological Information Network (CABIN). We will provide a data base which can reside on a portable computer that can be used for incident response to more than 200 chemical and biological agents and compounds. Information will be available on symptoms, treatment, decontamination, and protective equipment for agents that might be used in terrorist incidents. We currently are pilot testing this project in Boston, New York, Atlanta, Miami, Chicago, Detroit, Los Angeles, and San Francisco to ensure that it meets the needs of emergency managers.

- Forums for Governors' Senior Staff. In conjunction with the National Governors Association, FEMA will sponsor 2-3 forums for senior State staff on the terrorism threat and the roles and responsibilities of the State government in planning for and responding to such an incident. The Governor's Guide to Emergency Management will be updated to address the terrorist threat.
 - Working with the U.S. Army Corps of Engineers, FEMA is developing a guide for local governments on how to identify potential targets for terrorism in a community. It will include strategies for protecting such facilities and/or making them less vulnerable to terrorist attack.
 - Information Dissemination and Networking. FEMA routinely interacts with all aspects of State and local government on issues related to emergency management and has a number of established mechanisms for exchanging information with our customers. One example is the State and Local Emergency Management Data Users Group (SALEMDUG), which is a nation-wide computer bulletin board. When terrorists struck the Tokyo subway system with sarin gas last year, we used the SALEMDUG bulletin board to distribute information to State and local emergency managers regarding protective measures and other related issues.
- FEMA has a number of training activities which, although not directly targeted at terrorism, support terrorism consequence management. These include courses on handling mass casualty incidents, radiological response training, hazardous materials response, and use the **Incident Command System** and other disaster management response approaches. Training developed to support the Chemical Stockpile Emergency Preparedness Program (CSEPP), which address characteristics and protective actions for chemical agents that might be used in an attack, also is available to State and local governments. A number of training activities related directly to terrorism have been developed or are under development. These include:

- On November 6-9, 1995, a joint FEMA/International Association of Fire Chiefs conference was convened for fire chiefs from the 75 largest metropolitan fire departments and European and Japanese fire chiefs. It was held to share lessons learned from recent terrorist events here and abroad. Results from the conference will be integrated by the FEMA Emergency Management Institute and the National Fire Academy into a course for field delivery.
- A course on how to conduct rescue operations at crime scenes is under development and will be offered in the coming year.
- An Integrated Emergency Management Course (IEMC) which focuses on the terrorism threat has been developed. This course addresses the roles and responsibilities of all of the various elements of a response, including those of fire, law enforcement, public works, law, medicine, etc., and culminates in a 1-day exercise. Two of these courses have been held to help Georgia prepare for the Olympics. Other courses incorporating a terrorism scenario, including one for the District of Columbia, are planned.
- The Emergency Management Institute has already developed a number of courses for on-scene management for responders. These include the courses on Mass Fatalities and the Community Emergency Response Team.
- The disaster scene is not the place for emergency management personnel to either be meeting for the first time, or reading plans to determine what must be done. For this reason, we participate in, and host, exercises that bring together all responders who must work together. Terrorism is just one of the hazards addressed by our Comprehensive Exercise Program. However, many of the response functions (evacuation, search and rescue, sheltering, etc.) are similar regardless of the particular cause of the disaster. Recent exercises relating specifically to the terrorism threat include:

- FEMA has participated in exercises to prepare for contingencies surrounding past Olympic Games, Presidential Inaugurations, and other high profile events in the United States.
- In 1993, we participated in an exercise known as CIVEX, which involved a biological terrorist incident (anthrax) in the New York City subways. In this exercise, the Federal departments and agencies under the Federal Response Plan and State and City officials worked through the issues that would surround such an event.
- Exercise MIRAGE GOLD was a joint Federal, State, and local technical field exercise of the National Emergency Search Team. This exercise focused primarily on the Crisis Management phase of a terrorist event.
- I-TRAP is a series of table-top exercises sponsored by the Department of Defense to address policy level coordination issues associated with the response to terrorist events within the United States and abroad.
- A series of exercises being held in preparation for the 1996 Olympic Games includes Exercise MIRRORED IMAGE, sponsored by the Defense Nuclear Agency; Exercise OLYMPIC CHARLIE, sponsored by the FBI; and Exercise CALYPSO WIND, sponsored by First U.S. Army.
- FEMA will be sponsoring Exercise ILL WIND in the coming year to test and evaluate the ability of Federal, State, and local governments to respond effectively to a biological terrorist event. This exercise will focus on the transition from crisis to consequence management and will be the first major test of the terrorism annex to the Federal Response Plan. A series of table top exercises are planned prior to Exercise ILL WIND, beginning with an internal FEMA exercise this Spring for senior FEMA management.

CONCLUSIONS

- A nuclear, biological, or chemical attack by a terrorist is a disaster in the worst sense. While it is a national security and law enforcement problem, it also is a human problem because of its devastating effects on our people and institutions.
- FEMA and the other Federal agencies have an agreed-upon mechanism, the Federal Response Plan, which is designed to respond in conjunction with other Federal plans to the consequences of any disaster, even a terrorist event. The plan has been tested in catastrophic disasters as we know them today. And the President has directed an in-depth assessment of its capability to deal with the consequences of weapons of mass destruction. That assessment will be completed in July 1996.
- We are likely to find that our ability to deal with biological weapons is poor; that local governments (that is, the first responders) are not trained and equipped to deal with unknown nuclear, biological, and chemical contamination; that Federal assessment and logistics assets will be needed; and that all responders at all levels of government will need to train and practice, and then train and practice some more.
- FEMA will continue to work at an accelerated pace with the FBI, the other Federal Response Plan departments and agencies, volunteer agencies, and State and local emergency management authorities, to ensure that procedures are in place for timely and effective response, that tools are identified, and that training and exercises provide opportunities to practice response skills.
- We have a great deal more to do to ensure that we have covered, as best as possible, all contingencies. In the meantime, emergency management teams are ready to deploy and a response plan is in place.
- Thank you for this opportunity to provide information on FEMA's role in coordinating the Federal response to the consequences of a terrorist incident.

Mr. WELDON. Thank you, Mr. Hollister.

And representing the first-line defenders in the country, we are very pleased to have Chief Oettinger. Welcome.

**STATEMENT OF LEROY OETTINGER, DEPUTY FIRE CHIEF,
MONTGOMERY COUNTY, MD, DEPARTMENT OF FIRE AND
RESCUE SERVICES**

Mr. OETTINGER. Thank you, Mr. Chairman.

As the committee will recall, we, in Montgomery County, have some experience in dealing with the aftermath of terrorist bombings that result in building collapse or trauma patients. Our FEMA urban search and rescue team was among the first to arrive in Oklahoma City following the bombing of the Murrah Federal Building. While the scope and number of patients may be different, local emergency response forces around the country routinely deal with the sort of trauma caused by bombings. Likewise, the recent rail accident in Silver Spring, MD, showed that we could deal with multicasualty trauma incidents using regional resources.

The type of terrorism incident that Tokyo faced, be it from Sarin or other chemical or biological weapons, has yet to be seen by local emergency response forces in this country. We are certain, however, that it is not a question of if such an event will occur, but when and where it will occur. Speaking for Montgomery County, MD, and—I suspect—most of the rest of the fire forces in this country, we are simply not prepared to deal with a chemical or biological terrorist incident. We have neither the training nor the resources to allow us to mitigate this sort of incident.

I attended an excellent 3-day seminar last July sponsored by the U.S. Public Health Service titled "Responding to the Consequences of Chemical and Biological Terrorism." We heard from speakers from the State Department, the White House, the FBI, the CIA, Japanese medical personnel, the CDC, DOD, USAMRIID, and others. I must say that up until that time, I was blissfully ignorant of the potential for regional disaster posed by these weapons. I have not slept quite as well since.

Imagine a replay of the Tokyo subway Sarin incident at the Silver Spring Metro Station. In Tokyo, there were more than 5,000 people seeking medical attention. They entered the hospitals without being decontaminated. If we had just 10 percent of the patients that Tokyo had, we would be completely overwhelmed. Our ability to deal with 500 contaminated patients with various degrees of severity of exposure does not exist. Without immediate military assistance to support trained and well-equipped local emergency response forces, we will lose not only those most seriously exposed, but also many that should recover, simply because we will not have the resources or training necessary to deal with them.

We need Federal leadership, training, and equipment if we are to serve any purpose other than being the canaries in a CW or BW terrorist incident. Additionally, we need advance intelligence from the various agencies that may become aware of a pending incident or the threat of an incident, so that we can stage appropriate resources at nearby locations. Local emergency responders, lacking sufficient Federal leadership, advanced intelligence, training and

equipment, will become victims rather than rescuers following response to a CW or BW terrorist incident.

This committee may be aware that efforts are underway to form a medical response strike team for the Washington, DC, metro area comprised of health care professionals. This team will be responsible for providing on-the-scene advice to local emergency response personnel following a CW terrorist incident. This effort is commendable and a great first step. However, even when this team is in place, local emergency response forces will still be the first to arrive at a CW or BW incident.

It has yet to be determined what to expect from the various Federal agencies in terms of response time. I suspect that we would be fortunate if sufficient Federal resources are in place within 4 to 6 hours after the dispatch. The first hour will be the most critical and may well determine the outcome the entire effort will have on those exposed. I have every confidence that the Federal Government is prepared to do their portion of the emergency response to a terrorist event. They have many intelligence gathering agencies able to prevent most events. And, given sufficient time, they can amass other resources to aid local emergency responders. Through the combined efforts of the National Disaster Medical System and other DOD resources, they can aid in the mitigation of a terrorist incident. The big question is how long before the arrival of this assistance to the local authorities?

I am also convinced that, presently, local emergency response forces can do little to aid civilian casualties and, in fact, will become casualties themselves. What local emergency forces need most is the ability to safely intervene in the incident until the arrival of Federal resources. Our mission must be to begin triage and treatment pending the arrival. To do this, it seems appropriate that DOD, or another well-prepared agency, convene a task group consisting of those Federal agencies with a role in terrorist events as well as local emergency response forces.

Specifically, I urge this committee to recommend the formation of a multiagency task force, including local emergency response forces, charged with developing training criteria, recommending equipment and other resources; sharing of intelligence; and otherwise supporting the needs of local responders so that they may act as rescuers rather than adding to the victim count. I have included in my handouts copies of two resolutions from committees of the International Association of Fire Chiefs urging support for Representative Bill McCollum's amendment to H.R. 1710, the Comprehensive Antiterrorism Act of 1995. This amendment would add \$5 million to the bill to aid local emergency response personnel with training and equipment.

While clearly not enough in the long term, this would provide a good start and allow us to begin to prepare for the next terrorist incident. Thank you for allowing me this time. I will be happy to answer any questions.

[The prepared statement of Mr. Oettinger follows:]



DEPARTMENT OF FIRE AND RESCUE SERVICES

Douglas M. Duncan
County Executive

Chief Jon C. Grover
Director

**Testimony of Deputy Chief LeRoy R. Oettinger
Montgomery County Department of Fire and Rescue Services
before the
Research and Development Subcommittee, House National
Security Committee, U.S. House of Representatives**

March 12, 1996

Thank you Mr. Chairman. My name is LeRoy Oettinger. I am a Deputy Fire and Rescue Chief with the Montgomery County, Maryland, Department of Fire and Rescue Services.

As the Committee will recall, we in Montgomery County have some experience in dealing with the aftermath of terrorist bombings that result in building collapse or trauma patients. Our FEMA Urban Search and Rescue team was among the first to arrive in Oklahoma City following the bombing of the Murrah Federal Building. While the scope and number of patients may be different, local emergency response forces across the country routinely deal with the sort of trauma caused by bombings. Likewise, the recent rail accident in Silver Spring, Maryland showed that we could deal with multi-casualty trauma incidents using regional resources.

The type of terrorist incident that Tokyo faced, be it from sarin or other chemical or biological weapons, has yet to be seen by local emergency response forces in this country. We are certain, however, that it is not a question of if such an incident will occur but when and where it will occur. Speaking for Montgomery County, Maryland, specifically, and I suspect most of the rest of the fire and rescue forces in this country overall; we are simply not prepared to deal with a chemical or biological terrorist incident. We have neither the training nor the resources to allow us to mitigate this sort of incident.

I attended an excellent three day seminar last July sponsored by the U.S. Public Health Service titled Responding to the Consequences of Chemical and Biological Terrorism. We heard from speakers from: The State Department, The White House, The FBI, The CIA, Japanese medical personnel, The CDC, USAMRIID, DOD and

Bureau of Fire Safety Services

others. I must say that up to that time I was blissfully ignorant of the potential for regional disaster posed by these weapons. I have not slept quite as well since.

Imagine a replay of the Tokyo subway sarin incident at the Silver Spring, Metro station. In Tokyo there were more than 5,000 people seeking medical attention. They entered the hospitals without being decontaminated. If we had just 10% of the patients that Tokyo had, we would be completely overwhelmed. Our ability to deal with 500 contaminated patients with various degrees of severity of exposure does not exist. Without immediate military assistance, to support trained and well equipped local emergency response forces, we will lose not only those most seriously exposed but will also many that should recover simply because we won't have the resources or training necessary to deal with this incident.

We need federal leadership, training and equipment if we are to serve any purpose other than being the "canaries" in a CW or BW terrorist incident. Additionally, we need advance intelligence from the various agencies that may become aware of a pending incident, or threat of an incident, so that we can stage appropriate resources at nearby locations.

Local emergency responders, lacking sufficient federal leadership, advance intelligence, training and equipment will simply become victims rather than rescuers following response to a CW or BW terrorist incident.

This committee may be aware that efforts are underway to form a medical response strike team for the Washington DC Metropolitan area, comprised of health care professionals. This team will be responsible for providing on the scene advice to local emergency response personnel following a CW terrorist incident. This effort is commendable and a good first step. However, even when this team is in place, local emergency response forces will still be the first to arrive at a chemical or biological incident.

It has yet to be determined what to expect from the various federal agencies in terms of response time. I suspect that we would be fortunate if sufficient federal resources are in place within four to six hours after the dispatch. The first hours will be the most critical and may well determine the outcome the entire effort will have on those exposed.

In closing let me say that I have every confidence that the federal government is prepared to do their portion of the emergency response to a terrorist event. They have many intelligence gathering agencies able to prevent most events, and given sufficient time, they can amass other resources to aid local emergency responders. Through the combined efforts of the National Disaster Medical System and other DOD resources, they can aide in the mitigation of a terrorist incident. The big question is how long before the arrival of this assistance to aide local efforts.

I am also convinced that, presently, local emergency response forces can do little to aid civilian casualties, and in fact, will become casualties themselves. What local emergency response forces need most is the ability to safely intervene in the incident until the arrival of federal resources. Our mission must be to begin triage and treatment pending the arrival of help. To do this, it seems appropriate that DOD or another well prepared agency convene a task group consisting of those federal agencies with a role in terrorist events and also local emergency response forces.

Specifically, I urge this committee to recommend the formation of a multi agency task force, including local emergency response forces, charged with developing training criteria, recommending equipment and other resources, sharing of intelligence, and otherwise supporting the needs of local responders so that they may act as rescuers rather than adding to the victim count.

I have included in my handouts copies of two resolutions from committees of the International Association of Fire Chiefs urging support for Representative Bill McCollum's amendment to HR 1710, "Comprehensive Antiterrorism Act of 1995." This amendment would add \$5,000,000 to the bill to aide local emergency response personnel with training and equipment. While clearly not enough in the long term, this money would provide a good start and allow us to begin to prepare for the next terrorist incident.

Thank you for allowing me this time, if I can answer any questions I will be happy to do so.

Mr. WELDON. Thank you, Chief.

Mr. Sawicki.

**STATEMENT OF JACK SAWICKI, GEOMET TECHNOLOGIES,
INC., MONTGOMERY COUNTY, MD**

Mr. SAWICKI. Mr. Chairman, members of the committee, it is an honor to be here before you today. I do not think I can say anything about the threat, as well as my friend the Chief did. I would like to give a few comments, if I might, specifically to what we believe the DOD could do to assist local responders.

In my line of work, we do research and development in protective systems and testing of protective systems, and we specialize in the area of chemical weapons. In addition to my position as an appointed councilman on the local emergency planning committee in Arlington and also on the EMS—Emergency Medical Services—Council in Arlington, I would like to say for Mr. Weldon that I am also a member of the Cherrydale Volunteer Fire Department. So anyway, we have a very particular requirement in Arlington in that many Federal agencies are located there, including the Pentagon. I happened to be in Sweden when the Tokyo attack occurred, and I was touring their operations facilities there at their hospital in Stockholm where they are set up for this kind of an attack. Of course, I immediately called back to our medical director in Arlington and said have we preplanned this at all? And the answer, of course, was "no," not to the degree that we were able to do it for other types of operations.

In particular, the requirements are for protection, decontamination, and treatment, and we believe that DOD can do quite a bit to help us in that. First, the materials safety data sheets that are available now that were not available at the time of the Tokyo attack are basically from the [ERDC], Edgewood Research and Development Center and they are oriented toward military applications. They need to be rewritten by a group that is cognizant of civilian requirements to make them more applicable to fire, rescue, [EMS] emergency medical services, and hospital activities. [MSDS] minimum separation distance standards should be promulgated or distributed nationwide by FEMA or some other agency, and there also needs to be a training program with a video type of application that can go out to all of these agencies as soon as possible. And we believe that these can be produced in cooperation with the Army Technical Escort Unit; the Chemical School Contingency Support Group; the National Fire Academy; and working with local jurisdictions.

We think it is especially important that these courses or this information be carefully peer reviewed and validated to assure that the information is correct. We are very afraid that there are going to be a lot of experts appearing out in this field and offering courses that may not have the proper information.

Now, we also believe that the upgrading of the military provides us with a lot of opportunity for use of surplus equipment, and it requires a couple of things to do that. In particular, we are looking at the M-17 masks that are being replaced by the M-40's and the battle dress overgarments that are being replaced by the JLIST suits. We believe there is a potential for these suits to be issued

to local police departments, because right now, they have nothing, basically. We would also like to look at some of the programs that are ongoing within DOD. One in particular has promise, and I understand from talking with people this morning that equipment has been canceled now for lack of funds. The U.S. Air Force DERP Program, disposable eye-respiratory protective mask program. This mask or one of this type is a requirement for emergency medical support personnel and hospital personnel to treat victims of this kind of an incident.

We also would like to see the DOD make available to local organizations the M-256 and other detection kits, atropine auto-injectors, personal decontamination kits, and other military-specific equipment. At this time, they are not directly available through commercial means. We also believe the Army should use its significant R&D capability to help us develop detector tubes that can interface with the type of detectors that are used by the fire service today.

We also believe that the Centers for Disease Control, the National Institute of Occupational Safety and Health [NIOSH], OSHA, and DOD should work together to solve the issue of non-compliance of military gas masks with civilian standards. Right now, civilian operatives are precluded by law from using military masks. We would like to see some regulatory relief to address that. We would also like to see DOD work toward identifying an improved military filter canister that would allow NIOSH certification under 30 CFR part 11. Such certification would allow commercial manufacturers of [SCBA's] self contained breathing apparatus to incorporate them into dual-use hazmat systems that could be switched from supplied air to gas mask during extended operations.

And especially for Mr. Weldon, I have a couple of masks here today, if I could show you. This is the Air Force DERP, a combination hood and mask which works off of a neck seal. It is designed to be folded up into a very small package and used for nontrained personnel or minimally trained personnel. This could be used with great effect, especially in hospitals and by people who would be responding to an incident who might not have first-line breathing apparatus. One of the problems that we saw in Oklahoma City and other places is that we have enough breathing apparatuses to have our on-duty people protected. When you start calling in your off-duty people, you essentially have three or four times the number of people, and we do not have the respiratory protection on hand to take care of these people right now. An emergency mask right now—if it could be validated by NIOSH—could be very useful for this application.

It is stuck here. It is a good thing there is not an emergency. Nine seconds you are supposed to be able to do this in?

This is a U.S. Air Force chemical warfare kit mask. It is designed to be operated with a commercial self-contained breathing apparatus. There is also other apparatus available in Europe from different manufacturers. This system allows you to connect to your self-contained breathing apparatus or, when you are disconnected, to breathe through a military NBC canister. It is particularly useful in hazmat operations when you have a problem with decontamination, because if you are out of air, you can unhook, and you

can then breathe through the canister while you are being decontaminated. These are commercially available in Europe, but under current NIOSH regulations are unable to be used by firefighters in the United States.

Mr. WELDON. We used to have a canister-type mask like that, but I guess it did not have the sophisticated canisters you are talking about here.

Mr. SAWICKI. The switchover capability, that was called the all-purpose mask, and I had one of those too. They were used up until the OSHA Fire Brigade Standard was promulgated in 1979. The issue there was that we have the ability to go over to positive-pressure, self-contained breathing apparatus if we were in a fire or a highly contaminated area, thus maintaining requirements of 29 CFR 1200, the Emergency Response Standard for Hazardous Materials or the Fire Brigade Standard. But if you unhook, you still have the capability to operate for extended periods.

Now, one of the problems we have is the mask changeout process. We can essentially work for 30 to 60 minutes on a cylinder. If you are working on a subway station or in some other contaminated area, you have to come out for air. Your suit, your protective clothing, even if you just had your turnout gear on, it is still going to be contaminated by vapor. You saw this in the Tokyo attack. With this, you could change over your cylinders and still be protected in that interim period, and you could also rest—you could do a lot of other operations.

So we think there is a lot of capability to transfer this technology to the civilian area. Currently, we do not see that being done, and we think the Congress should provide the funding and direction to DOD to allow them to help us in this area. Thank you.

[The prepared statement of Mr. Sawicki follows:]

Testimony of Jack C. Sawicki
before the
K&D Subcommittee, National Security Committee
U.S. House of Representatives

12 March 1996

I am Jack Sawicki, from Arlington, Virginia. I work for GEOMET Technologies, Inc., in Montgomery County Maryland, where we operate a U.S. Army certified Chemical Surety Laboratory, one of the 10 or so sites in the U.S. that routinely operates with nerve and blister agents. Our main business is the development and testing of protective equipment and sensors for chemical weapons. We have active contracts with the U.S. Army for all of these activities, and serve a number of industrial customers, both domestic and foreign, as well. This focus gives us an excellent overview of the capability to respond to attacks with these weapons.

I am also a member of the Arlington, Virginia Local Emergency Planning Committee, although I am not an official representative of that organization today. However, I can share the observation that Arlington is very concerned about the capability to respond to Federal facilities in our jurisdiction, which includes the Pentagon, and buildings housing many other agencies.

Since the Tokyo attack GEOMET has been active in trying to assure that U.S. communities, particularly in the Washington D.C. area, are prepared for a chemical weapons attack. I worked with the Council of Governments to write the appeal to the President that resulted in the establishment of the U.S. Public Health Service "Strike Team" that is developing plans for "consequence management" to chemical and biological attack. While we applaud this important effort, we still believe that insufficient attention is being paid to train and equip the first responders to such an attack.

In particular, the first responding fire fighters must be able to detect the chemical agents, protect themselves from contamination, prevent chemical agent vapors from spreading and warn those at risk, treat large numbers of patients, and decontaminate patients, the scene, themselves, and their equipment, and verify that it has been effective. The fact that CW agents are thousands of times more toxic than industrial chemicals for which fire fighters have been trained makes new procedures mandatory.

The local police must be able to contain and neutralize any terrorists without exposing themselves to agents until the FBI arrives. The fact that the Congress has not acted in the last months to make possession of small quantities of CW agents illegal, including sarin, soman, tabun, and the various V-agents, only serves to make their job harder, and I urge you to take action to do so at once.

Hospitals must be able to decontaminate and treat patients that arrive there themselves, as happened in Tokyo, and protect the facility and hospital personnel. Since hospitals are increasingly for-profit corporations that are not under community control, it will require a concerted effort by a number of authorities to solve this problem, and again I urge you to investigate this issue.

However, the main thrust of my testimony today is ways that the Department of Defense (DoD) should assist local communities in preparing for CW attack. The expertise to respond to chemical and biological attacks exists within the DoD, but currently the approach to providing assistance does not appear to be focused, and I believe that DoD needs to work aggressively through appropriate channels to give local government the assistance they need. In particular, this includes providing the following:

1. Updated Material Safety Data Sheets (MSDS) for each agent that provide specific, validated, and peer reviewed Standard Operating Procedures (SOPs) for civilian police, fire, HAZMAT, EMS, and hospital staff. The MSDS should be accompanied by one or more training videos, produced in cooperation with the Army Technical Escort Unit, a local jurisdiction, and the National Fire Academy, that clearly illustrates the proper procedures for each operation. This material must be widely distributed to all local governments, perhaps via FEMA and EPA SARA Title III support.
2. Access to surplus military equipment, particularly M-17 gas masks which are being replaced with M-40 masks, and Battle Dress Overgarments, which are scheduled to be replaced with JSLIST suits, for issue to Metro and local police officers. Most now are using masks that provide protection from tear gas only and have no protective clothing.
3. Inclusion in current development programs, such as the U.S. Air Force Disposable Eye Respiratory Protective (DERP) mask program, that have immediate application for use by emergency medical and hospital personnel. While this type of mask may not meet all current DoD requirements, it has been available from at least one contractor, ILC Dover, for several years, and could be fielded almost immediately. Alternately, commercially available masks could be investigated by Army labs to determine if NIOSH approved mask filters provide adequate protection from low concentrations of CW agents.
4. Allow purchase of current DoD M256 and other detection kits, atropine autoinjectors, personal decontamination kits, and other military specific equipment by local government. The Army should also initiate an immediate project to develop detector tubes that can be used with currently available "Draeger" type pumps to detect nerve and blister agents. These tubes are actually said to be available from the former Soviet Union (FSU) and other eastern bloc states, but are not sold in the U.S.
5. Join with the Center for Disease Control (CDC), National Institute for Occupational Safety and Health (NIOSH), and the Occupation Safety and Health Administration (OSHA), to (1) solve the immediate problem of non-compliance of military masks and filters with civilian safety regulations by issuing a limited variance for emergency operations; and (2) identify an improved military filter canister to allow NIOSH certification under 30 CFR Part 11 and other regulations. Such certification would allow commercial manufacturers of self contained breathing apparatus (SCBA) to incorporate them into "dual purpose" HAZMAT systems that can be switched from supplied air to gas mask mode during extended operations. Such systems are common in Europe, and have been adopted by the U.S. Air Force and other agencies.
6. Provide an analysis of foreign military and civilian equipment that might be useful for U.S. responders. For example, in Sweden, I saw demonstrations of coordinated operations of police, fire, EMS, military, and hospital personnel responses to CW attacks. The Swedish Civil Defense organization apparently has a well thought out plan for dealing with this scenario, which includes gas masks, disposable protective suits, decontamination showers, etc. The Swedes also demonstrated a set of detector tickets that could be validated for U.S. sale and use.

In summary, I believe the DoD has enormous capability that has not been brought to bear on the CW/BW terrorism problem. I ask the Congress to provide the direction and funding to allow DoD resources to be directed to this critical problem.

Mr. WELDON. Thank you, Mr. Sawicki and thank you too for your outstanding testimony. And I agree with the premises that you make about the absolute need to understand the lack of any type of capability within the civilian segment of our population. Over the past 10 years, I have had the pleasure of attending almost every disaster that the country has had as the chairman of the Congressional Fire and EMS caucus, and I have been to all of them, from the World Trade Center bombing to the Loma Prieta earthquake, to Hurricanes Hugo and Andrew, where I spent the weekend, to the wildlands' fires in southern California and Yellowstone. And the idea here is to learn from the experiences. What has struck me—and hopefully, this is being addressed, Mr. Hollister—6 years ago, I introduced legislation entitled the National Disaster Preparedness Inventory Act. That would have had FEMA—this was before the Clinton administration established a computerized inventory that is available to the incident commander. Now, you mentioned a computerized inventory of chemicals.

Mr. HOLLISTER. Yes, sir.

Mr. WELDON. I guess this is similar to what Chemtrek has had, that is, a system that industry developed itself, but perhaps one that we run in the Government. Do we, as of this date, have a computerized inventory available at the quickest possible moment for a local incident commander to know the various kinds of resources that he can access that will help him deal with that emergency? And this ranges from everything from a thermal imager, as was used in California when the freeway sections collapsed to look for the people who were still trapped, to structural engineers, where they can be accessed, or perhaps specialists in the military. Do we have a computerized system that is all-encompassing that brings all of this data together so that it can be made available immediately in an emergency situation?

Mr. HOLLISTER. No, sir, we do not.

Mr. WELDON. I just wish—I remember when Mrs. Quayle was working these issues when President Bush was in office, and she said FEMA was moving in that direction. I just think that could serve such a vital purpose, because the first couple of hours when FEMA arrives to support the local incident commander are critical, especially in terms of getting people out of buildings like we saw in Oklahoma, and having access to whatever it is that we have in the Federal Government. I am not even convinced that we know what the Defense Department has in the way of resources. And I do not mean to be critical, but I have asked time and again—and we had a hearing last fall on this issue—to analyze the state of new technologies that the Defense Department has. I do not even think we have a good handle on it within the Defense Department itself. And I would just hope that somehow we could force this issue, both within DOD and then agencywide, to assess what capabilities we have that can be brought to bear when a disaster actually occurs. FEMA would be the—and I am not saying this to be critical of FEMA, because I think, as I said before, that Mr. Witt has done an outstanding job in making the agency much, much more responsive to the situations that we have had occur throughout the country.

Let me get into the issue of training. I am familiar with the Institute and the Fire Academy. Do we have ongoing training programs now in terms of sensitizing, especially our major cities, telling or explaining or describing what they should do in terms of chemical and biological situations if those should occur?

Mr. HOLLISTER. Not specifically. What we are offering now, which I think is the best example, is the integrated emergency management course, sir, which is about a week long, 4 days long, where we bring in State and local officials in all of the disciplines—medical, legal, police, and fire—and run them through a training program. Then they exercise against each other in their actual real-life roles. We have retooled that for a terrorist scenario. And we have in fact given two of these IEMC's for the officials in Atlanta. That is the most specific program we have now.

We have peripheral courses in mass casualties, and we are developing a course in response at a crime scene. This is an issue that we had working in Oklahoma City, which was a learning experience for us, as the Chief knows. And by the way, I would like to compliment Montgomery County and the work in the urban SAR [search and rescue] program that they do. We are very proud to be associated with them.

We do not have specific courses in those fields, sir.

Mr. WELDON. I applaud you for the urban search and rescue program you established. I attended one of the first conferences in Seattle when you were just getting the program underway, and I am very familiar with what was done to assist Oklahoma. It has been, I think, a model program where the Federal Government has played a very vital role in empowering local officials to assist in a moment's notice in terms of major incidents across the country.

Chief, you mentioned planning dollars, and I will support Representative McCollum's amendment for \$5 million, but that is a drop in the bucket. I mean, we are talking about 32,000 organized departments in this country. The \$5 million is pennies. What I think we should do is what is contained in the National Disaster bill that now has 240 cosponsors in this Congress and that we are trying to get to the floor of the House. One of the provisions that I pushed strongly for would allow local governments to use a portion of their CDBG dollars. Every municipality in America gets Federal community development block grant moneys, but today, they are prohibited from using any of that money for preplanning emergency disasters, whether it be ordinary disasters or a chemical or biological situation. If we could free up the availability of a portion of those dollars, then, we would have some money that is already coming through the pipeline that you could get access to. So, I will support that \$5 million, but I do not know that it is going to be able to solve our problem in terms of the need that is out there. But I appreciate and support your recommendation. We are not doing anywhere near enough in the area of assisting towns which are preplanning and thinking about these kinds of situations.

It is very frustrating to me to live in a country where we operate on a disaster theory. We do not really want to do anything until a major disaster occurs where there is significant loss of life, and then, everybody says, "Why did we not do something?" And here,

we have a situation where, if we take a look at what happened in Japan and look at what happened in some of the cities where there have been terrorist incidents and where there have been other incidents involving not necessarily chemical and biological weapons, but acts of terrorism, we are grossly, I think, unprepared in this country from a civilian standpoint. And we in the Congress have got to work with the administration to reverse that.

Let me move on. And just before moving on to my colleagues on the minority side, let me just say that for the record, I have asked the question, and our staff has given us an assessment of all of the support that we are currently giving to the Government of Israel in the current problems that they are experiencing. That is now declassified, and we will make it available for the record. We are very aggressively responding to the Israeli Government's need in terms of the terrorist acts that have been occurring there over the past several weeks, and I appreciate our Government's quick response over there. And hopefully, that would be available to any Government that would request that kind of help from our particular Government.

With that, I will turn to our members, and I assume Mr. Taylor would be first.

Mr. TAYLOR. I want to direct to this panel the same question that I directed at the last panel. I am particularly concerned with the porous borders of the United States of America. What is being done to see to it that a nuclear, biological, or chemical weapon is not shipped in one of those 4 million container units a year that come into this country? I do not consider myself a particularly clever person, but I would assure this body that I could get a vessel within 2 miles of the Capitol with a box the size of a refrigerator on board, and I do not think anyone would notice. And I do consider that the biggest threat right now, since everyone has pretty well said that we have to be the most concerned about rogue elements.

Mr. BLITZER. Mr. Taylor, just to mention to you on this particular topic area, for us and the FBI. We work very closely with the intelligence community and law enforcement communities in other countries on this issue. There is not a whole lot of intelligence out there in general about the movement of these kinds of things, frankly. But it is very, very easy on balance for them to get the kind of materials, either chemical or biological, here in the United States. In my testimony, I mentioned to you about one incident where a gentleman ordered the plague, and it was just a matter of having an EPA number and a credit card. It came to him in the mail.

So it is, I think, an unusual threat, because there is little intelligence out there indicating that the state sponsors or the radicals or domestic groups are focusing on bringing stuff into the country.

Mr. TAYLOR. Mr. Blitzer, if I may?

Mr. BLITZER. Yes, sir.

Mr. TAYLOR. Would that not be the path of least resistance, though, especially with the disarray in the former Soviet Union? Has it not been documented that there have been two instances where they tried to get a nuclear device? So how many times have they tried to get a chemical or a biological device?

Mr. BLITZER. I do not think they have. I do not think that we have any intelligence out there—at least there is none that I am aware of—where they have tried to do that. The stuff that I have seen is the stuff that I put in my testimony about the Ricin manufacturing and the couple other examples that I highlighted in there. So we have just not seen that. I am not saying it could not happen; I am just saying to you that we have not seen it. And some of the people whom we are up against today, Mr. Taylor, are very sophisticated individuals. I think someone mentioned the group in Japan had a couple dozen Ph.D.'s, the Aum Shinrikyo group.

And some of the people whom I look at here are extremely well educated. They are chemical engineers; they are sophisticated people. It is not really a problem for them to put this kind of a device together. They have the capabilities to do it, and the materials are relatively easy to get, just as we saw in the World Trade Center bombing. Those materials were very easy to get; they are quite inexpensive. And it is the same kind of problem.

Mr. TAYLOR. I have been reading your statement, and I saw the 3- and 4-year sentences that were given to the group that tried to kill the deputy U.S. Marshal.

Mr. BLITZER. Right.

Mr. TAYLOR. Do you think that if, for example, they had threatened that same marshal by holding a gun to his head, what type of a sentence would they have gotten? And the question I am leading to is: is there enough law out there to act as a big stick to—in some instances at least with the semirational people—keep them from committing a crime?

Mr. BLITZER. The answer to that is no, there is not enough legislation. I think there was legislation introduced last week by the Justice Department that would strengthen some of these areas so that we would get more significant sentences when we have these kinds of situations. It was rather dismaying to me also to look at the kind of sentences we got in those cases. Sometimes, for us, if we do not have the kind of sentencing or kind of laws that we need, we are going to have to go another way, into mail fraud or wire fraud or some kind of other violation that we can charge; I think we did in a couple of these cases.

Mr. TAYLOR. You mentioned the group that had gotten their hands on 35 gallons of cyanide. And you said that, well, it would have zero effect in Washington, DC, or—

Mr. BLITZER. Water.

Mr. TAYLOR—In New York. But many of the communities certainly that I represent, and anyone from a rural area represents, they have one water tower.

Mr. BLITZER. Sure.

Mr. TAYLOR. What if it is a town of 5,000 people, and they put it in one water tower? What happens then?

Mr. BLITZER. Certainly a different outcome.

Mr. TAYLOR. Again, what is the law with regard to that? What were those people charged with? What kind of a disincentive is there?

Mr. BLITZER. I think in my testimony I indicated to you particularly on the chemical side the chemical weapons convention would give us some additional—if the thing gets ratified and signed off by

a majority of the parties—it will give us some additional teeth. At this time, the law on this is just not as tight as we would like it to be, and that is where we are.

Right now, we use title 18, section 2332(a), which is a portion of the statute which addresses weapons of mass destruction. And the problem that we are having with that in terms of elements of the proof is we have to prove that someone has a chemical weapon, that it is a chemical weapon. It is not good enough that we have some information that they may be making a weapon and have chemicals. We have to prove that they actually constructed a weapon. It is difficult to take it to court.

Mr. TAYLOR. Is the rest of the panel in agreement that the largest threat is posed from internal sources rather than external as far as the acquisition of a weapon of mass destruction or a chemical or biological weapon?

Mr. OETTINGER. I am aware that it is not difficult to make a chemical weapon. One of the seminar work groups that I attended explained in great detail how you could make nerve agents out of pesticides.

Mr. TAYLOR. I want to use an analogy, Mr. Blitzer. I recently came from Peru, where over the years, our Nation and other nations have passed laws to track the flow of precursor chemicals.

Mr. BLITZER. Right.

Mr. TAYLOR. But it is commonly defeated, those attempts are commonly defeated because it does not track if, I think, it is in a 5-liter jug or less.

Mr. BLITZER. That is an excellent analogy.

Mr. TAYLOR. Do you run into the same problems?

Mr. BLITZER. That is an excellent analogy, because that is very, very much the same in this particular area. It does not take a whole lot to make a chemical biological weapon, particularly a biological weapon, and I think this case that we had that I mentioned to you about the mail order stuff really raised some alarm in the entire community. I think it has been almost the touchstone or the touch point where this additional legislation which would include more regulation as well as criminal penalties. I think it was formed because that legislation was constructed because of that incident, because we saw a hole in the system, and it needed to be plugged. So that is important legislation, in my view.

Mr. TAYLOR. Anyone else?

Sir, you had your hand up?

Mr. SAWICKI. Yes, sir; excuse me. We did a little bit of research on the subject as a company that does testing for the military, and we are very strictly controlled by the military. But it is under what is known as a bailment agreement, which is actually a contract. And were we to choose to operate without a bailment agreement, we would not be in violation of any law. We work very closely with Montgomery County; in fact, we trained with their hazardous materials unit 2 weeks ago. But under small quantities, that leaves a 2-pound limit. Under Sarin—title 3, there is no requirement for even reporting of private ownership of Sarin or any of the other nerve agents. We have at times submitted documentation to the Justice Department asking them to promulgate a law to try to reg-

ulate the simple possession of nerve agents, and so far, we have not seen any action on that.

Mr. TAYLOR. Mr. Chairman, just one followup.

Under ideal circumstances, how many people could you poison with 2 pounds of Sarin?

Mr. SAWICKI. I am not an expert on that, sir. I am sure—

Mr. TAYLOR. My question is if they are not even checking on 2 pounds of it, how big of a threat is that? Is that a threat to 50 people? 500 people? 5,000 people?

Mr. SAWICKI. You could do a pretty good job with 2 pounds of it, sir. It all depends on how it is dispersed. If you could put it into a system that would heat it up to a higher temperature, have a fan to disperse it, you could put it in a lunchbox-type device and place it in a crowded area. It could be a pretty effective weapon.

Mr. TAYLOR. Thank you, Mr. Chairman.

Mr. WELDON. Thank you, Mr. Taylor.

Mr. Geren.

Mr. GEREN. Thank you, Mr. Chairman.

Chief Oettinger, in talking about how this community would have been overwhelmed by an attack similar to the one that they had in Japan with the Sarin, what would it take for a community anywhere to be prepared for something like that? Is it realistic to even try to be prepared for that type of an eventuality? Have you all done a study to try to determine what sort of manpower needs you might have? Would it be a question of adding a lot of new folks or just training people in new techniques? Would it require a tremendous amount of new equipment? Is it just something that we could do with better utilizing old equipment? What are we talking about if we really want to, as a country and as a collection of communities, undertake to prepare ourselves to deal with a catastrophe of that sort?

Mr. OETTINGER. It would take a lot of things. I think we should start at the beginning and train our 911 call-takers. In the Tokyo incident, the first 911 call was answered, and the station attendant said there are some people having seizures on the platform. And a short time later, the next station in the line reported similar, and the third station in the line reported a similar thing, but the call-taker did not put that together. If we get a call today in the Montgomery County 911 center of six people having seizures on the platform at the Wheaton or the Glenmont Station, is that a Sarin incident, or is it a bunch of bad tuna fish they had for lunch? I do not know the answer.

In addition to that, once we can identify and do some training at the call-taker level, we need to train the first responders. Should they go rushing into these people assuming they are ill, or should we take some time and see if, perhaps, there is a CW agent in place? Once we determine that, it is a question of treating, decontaminating, and transporting. Hopefully, by the time we get downstream, we will have some Federal assistance there. I think the Washington metropolitan area could probably handle 500 patients, assuming they were properly decontaminated before they arrived at the hospitals. As you may know, atropine is pretty specific for Sarin. Given the right dosage in the field, I think we could mitigate

that kind of an incident. But we need training, and we need some material, and we need some more plans to fit in with the military.

Mr. GEREN. So you basically think that most collections of emergency service providers in major metropolitan areas would have to do a little more than just have adequate training in order to mitigate this kind of a catastrophe?

Mr. OETTINGER. No; we would need some material also, some masks, some equipment that would withstand Sarin or other nerve agents. We would need some sensing equipment to determine whether or not we have a CW agent in place. I am aware from previous testimony that the equipment exists, but we certainly do not have any. I am not suggesting that every fire department in the country should have some, but it should be strategically placed in an area the size of Washington, DC. If your point is what are we going to do in a small rural town in the Midwest? I do not know. They are certainly worse-prepared than we are.

Mr. GEREN. No, that is not my point. I am just asking questions and trying to understand, because there are obviously a lot of catastrophes that would overwhelm us if that catastrophe were to befall us. I'm trying to just get a sense of which ones we realistically can deal with and which ones we could not, and obviously, personnel needs and costs associated with dealing with it are all the sorts of things. I mean, you have to prioritize which kinds of disasters you are ready to approach and decide; a lot of factors go into that. My guess is that there are other catastrophes that you know could happen to your service area that you would have a hard time dealing with, but you do not have the manpower; you do not have the money to do anything about it. And I am just trying to think from a policymaker's perspective how we think through these and identify the ones in terms of what are the resources necessary and what do we need to do to try to put them in place? Perhaps it would be have regional centers for this—it would be part of FEMA, I guess—and allow them to go from one spot to serve a couple-hundred mile area.

Mr. OETTINGER. You know, we do have regional mutual aid agreements within the Washington, DC, COG—Council of Governments—area where we will aid Prince Georges County, and Fairfax will come in and help. So there are a lot of resources here. I am not talking specifically about personnel. I think we have enough personnel. What we do not have is training and material.

Mr. GEREN. So you would think that that is generally the case, that we could go a long way towards mitigating the consequences of one of these type attacks with just additional training, and that would be something that you would recommend as just a matter of policy for emergency services folks—

Mr. OETTINGER. Yes.

Mr. GEREN [continuing]. In major metropolitan areas?

Mr. OETTINGER. I think some training would have to be developed in cooperation with people that know a lot more about it than we do. Once the training is developed, we would deliver it a variety of ways. And, as I say, we do need some suits and some sensing equipment.

Mr. GEREN. Do you know if any of the fire chiefs around the country since the Japanese incident have undertaken to try to pre-

pare for that kind of disaster in any other major urban areas that do have underground transportation systems?

Mr. OETTINGER. I am aware that since April 19 of last year, there have been numerous regional seminars on the effects of terrorism. I attended one. I am aware of at least four or five others. The theme was "here is what may happen, or here is what has happened, or here is the potential." It was not "here is how we can fix it." Clearly, it is a topic of discussion.

Mr. GEREN. Well, certainly, the tragedy in Japan increased all of our awareness of that possibility, and I guess where do we go from here is the question all of us have.

Thank you, Mr. Chairman.

Mr. WELDON. Thank you, Mr. Geren.

I guess what I am hearing here is—and this is partly building on what Pete has just brought out—but from your testimony today, it sounds to me like what we need is basically what FEMA forced over the past 3 years, and that was the establishment of the urban search and rescue teams, which are dispatched, I guess, in a matter of hours when an incident occurs wherever they are needed in the country.

And General Swain, I guess what I would ask you is, "I know we have a national emergency response team regarding nuclear incidents; could not a similar team be developed that could be made available through FEMA for incidents of this type that could respond very quickly if an incident occurred?"

Mr. HOLLISTER. If I may, sir, respond.

Mr. WELDON. Yes.

Mr. HOLLISTER. Then, I will turn it to the General.

I referred in my testimony to a proposal—and so did the Chief—that the Public Health Service has put forward and in fact which they are prototyping here in the Washington area called the Metro Medical Strike Team which would, in fact, be an analog, if you would like, to the urban search and rescue concept. I believe the proposal has approximately 30 people on the team; they are local specialists. They would be given special training, and they would be there immediately far faster than we could ever get a SAR team there to assist the chief and other local officials, do an assessment. And then, that is a concept that we are very strongly in support of.

Mr. WELDON. Would that same team be available to be dispatched to Little Rock, Ark, or to Denver, Co, if an incident occurs?

Mr. HOLLISTER. The concept being put forward by the Public Health Service now has two stages to it. There is a national team called a chemical/biological quick reaction team. That is a concept that would essentially come from the Washington area or from CDC to go out anywhere, and that is supported by the concept of the Metropolitan Medical Strike Teams, which I think their proposal is for 10 of them in the 10 major metropolitan areas.

Mr. WELDON. Would they be utilizing Defense resources like we have available?

Mr. HOLLISTER. Yes, sir. The metropolitan teams would not necessarily. They would probably get training from Defense, and they would get training from us and from EPA. Whether they carried

with them Defense assets, I do not know, sir. The Health Service could elaborate on that.

Mr. WELDON. General, would the military be prepared to handle that?

General SWAIN. Sir, yes, and we already do. A couple of things that I think are important to note: First, the President has made chemical biological the highest priority of threat against the United States to national security. So I think that in itself speaks to the fact that there are people listening out there. Second of all, we do have an interagency group for combating terrorism that meets weekly. I think—and I would like to use your example for just a second, the response to the Israeli request, without getting into any classified. From the time the request came in until the time that type of counterterrorist equipment was available is fairly quick.

Specifically in the area which you wanted to address, which is chemical biological, we have upon request highly specialized support teams in both the chemical and biological incident area for natural disasters and also massive outbreaks of disease. That is for natural disasters. Also, we can provide assistance to civilian authorities during a terrorist incident involving the same type of chemical or biological items.

Now, there is a very clear process. The national authority has presently directed all agencies, all administrations to review their counterterrorist activities. We all are doing that at this time. There is a committee, as I said, that meets weekly to discuss this. We have exercised a month ago at a very senior level the national type of decisions that are required by our senior leaders for a chemical biological incident. And in about 2 weeks, we will do another exercise specifically oriented to weapons of mass destruction, including chemical biological, for the Olympics. So this is not something new. However, what is the requirement is that someone has to ask for DOD support, because we are a support agency. If it is consequence management, that is, the incident occurs, then the request comes through FEMA and down into the military chain. And because of the sensitivity, the Secretary of Defense has just rewritten the policies where he now has oversight over many instances to make sure that all the efforts are pooled and that there is attention to that request. If it is not consequence management, that is, terrorists, then we respond to the Federal Bureau of Investigation. All of these areas are very well codified, and I would say at least at the senior level, the process, the decisionmaking, the involvement and then the subsequent actions have been worked.

For instance, suppose we have a train derail, and we have massive spillage of chemicals. Normally, that is handled through FEMA. And in the recent ones, the DOD has not necessarily been required to support. But if the support were required—depending on what they wanted—certainly, we are prepared to respond with these teams, flyaway teams like this, that are available.

Mr. WELDON. Mr. Oettinger. You raise a good point there, because I think that this past weekend we had an incident—I believe it was up in Wisconsin—where we had a hazmat train derail, and we had several of the cars on fire, and they had to evacuate the community for 4 days. My concern is whether or not there is a mismatch in terms of making the resources known to the local incident

commander. I do not know if FEMA was ever brought into that incident. Were they brought in on that incident, Mr. Hollister?

Mr. HOLLISTER. We were not officially asked for help. We tracked it; we spoke to the State emergency director regularly; we watched that very closely to see if there was a call. We were ready to respond and if needed to call EPA as required.

Mr. WELDON. That is good to hear.

I am sorry, did you want to say something, General Swain?

General SWAIN. Sir, I would just say again that it is a fairly well-regulated system where it starts at the lowest level. The fire department needs help; it goes to the next echelon; it goes to the next State; then requests it of FEMA. Certain incidents require Presidential authority. I am sure you are aware of that. There are certain incidents that the Attorney General is authorized to respond to.

Mr. WELDON. And I am aware of that. As a former mayor and county commissioner, I am aware of the levels of the chain of command in incidents. What concerns me is not necessarily getting the right go-ahead to commit the various levels of government, but do we have our act together in terms of the Federal Government to bring in the shortest possible time the maximum variety of resources that are needed? That is where my concern is, and that gets back to the computerized inventory; that gets back to the specialized technologies; it gets back to the medical infrastructure that FEMA is already working on. That is what my concern is. Can we respond very quickly in that situation? And that is what I am trying to get at.

Mr. BLITZER. Mr. Chairman, in my testimony, I talked about an event that occurred earlier last year where a large facility was threatened by a chemical threat. Within 24 hours of receiving the threat, we had activated our contingency plans; we had brought to bear our threat assessment groups. We had made a decision as to deploying combined interagency resources immediately to the scene, which included, I think, 20,000 vials of atropine. It was very quick, and, I thought, very successful. It started in the afternoon. We had our initial assessment, I think, within the hour. It was a threat on a videotape. We had it flown in, assessed by the group overnight, and I thought it worked extremely well in that kind of a situation. Now granted, there was really at that point no consequence management. We were in the preventive mode; we were looking at it as a terrorist threat. But I thought it worked extremely well.

Mr. WELDON. Good.

Mr. BLITZER. And FEMA and Public Health in particular I thought were highly effective because they immediately reached out to the local authorities. We had ambulances; we had hospitals; we had everything that we needed in the event it went bad. And I think it was very good.

Mr. WELDON. Let me just ask one additional question, and this I would ask for the record. One of the frustrations that I have as chair of the R&D Subcommittee—and we had a hearing back in the fall on this issue—is that the military oftentimes is developing new, state of the art and yet not letting the civilian world know that this technology is coming on the horizon. The civilian segment

may have a need for a particular technology and not know how to communicate that to the right agency within the military to make the connect.

I have just seen three recent examples. I was out in California in January looking at missile defense technology and visited one of our TRP sites and saw a dual-use technology for cutting rebars, that I do not even think the fire service has seen yet and that was developed by the military for some other purpose, that will go in in a matter of seconds and cut any rebar that would have to be cut to extricate people from a building. I was briefed on a classified program that we have that can assist local emergency responders in detecting where wildlands' fires are occurring. I mean, unbelievable assistance for folks out in the western part of the country who have a terrible problem in terms of the urban-wildland interface. And then, I was also briefed on the technology we have for the location program, the GPS system, locating not just vehicles but using that in situations where you may have emergency responders who are not visible whom you can track through the GPS system.

I guess my point is I think there has to be—and I would ask you all to agree or disagree, especially from the local standpoint—there has to be more of a way to force open some of these technological advancements that are coming up where you can get access to them, and vice versa, where you can make your needs known to the military. We are spending about \$30 billion a year in military R&D, \$30 billion a year. I mean, there has got to be more technology being developed there that you all could have access to. Do you all agree with that or disagree?

Mr. SAWICKI. Yes, sir; I do.

Mr. OETTINGER. Mr. Chairman, I would love to have access to the military's catalog of goodies.

Mr. WELDON. Yes.

Mr. OETTINGER. But even if I were given it, we could not afford it. You may recall a TV program a week or so ago where they showed a new device that firefighters wore that they could see through smoke. It was an infrared device developed by the military. It cost \$25,000 apiece. That is pocket change to the military; that is a lot of money to us.

Mr. WELDON. No, I understand. That is a different issue we have to address, the funding issue. But some of the more exotic technologies, you may not be able to afford to have in your own control. But if you know that you can access them and could get them within an hour, certainly, you would want to know that.

Mr. OETTINGER. Absolutely.

Mr. WELDON. You would want to be able to access that technology if the military has it for their own purpose.

Mr. OETTINGER. Yes.

Mr. WELDON. So that is something we are going to work toward. I want to thank you all.

Do you have any followup questions, Mr. Geren, that you would like to raise?

Mr. GEREN. Yes.

Chief Oettinger, your comment about how prepared the 911 would be to identify an incident such as this in the early stages—and I guess Mr. Hollister—is that something FEMA does? Do we

work with 911 services around the country to help educate them? Is there any standardization at all to the 911 training, sir, that you are aware of.

Mr. HOLLISTER. It is not done, sir, through our agency, no.

Mr. GEREN. But it would seem to me that would be an area—

Mr. OETTINGER. There are standards, sir. There is an agency—I cannot recall—

Mr. WELDON. NEMA—NEMA is the National Emergency Management Agency—the one that oversees all of the 911 efforts nationwide. That is who we probably have to work through.

Mr. OETTINGER. And there is another training group also, right? There is also a standard for 911 dispatchers.

Mr. GEREN. But do you know if there is any effort to ensure that they are kept up to date in this area in terrorist attacks, or does it mostly focus on, I guess, the 99.9 percent of the calls that you are going to get, which would be the health threats other than terrorist attacks? I just wonder, Mr. Chairman, if that is an area where some of what the military has learned and what FEMA has learned could be disseminated through NEMA and perhaps prepare the 911 providers with some of the information that they may not already have. I really do not know the answer to that.

Mr. WELDON. Well, I think it is an area that we should pursue. I think that as a closing statement, let me just say that we appreciate you all coming in. The testimony was outstanding, and I think that it underscores the fact that there is much more work that needs to be done in preparing our urban areas and our general populace in terms of the threat of a chemical or biological incident and the preparation that would be required to meet such a threat. FEMA is doing a fine job. I have said that several times, and I will say it again. But I think more can be done, and part of that is a resource problem. And it is up to this Congress to put the commitment in terms of resources to match the need that we know is there.

I pledge my support to make that happen, and I would like to give FEMA the additional resources not just after the disaster occurs to pay for it—which is what we tend to do—and spend millions of dollars in that process but to deal with it up front so that we can minimize the impact of the disaster before it occurs.

So we have a lot of work ahead of us. Certainly, it is a challenge. But we certainly have gained some new insights today. We appreciate your testimony; it was outstanding, and we look forward to your followup.

Thank you. The hearing is now adjourned.

[Whereupon, at 4:40 p.m., the subcommittee was adjourned.]

[The following material was submitted for the record:]



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H.R. 1710 - "Comprehensive Antiterrorism Act of 1995"
The Fire and Emergency Services Training Amendment

Amendment introduced by Rep. Bill McCollum (R-FL)

The exact text of the amendment is as follows:

Add at the end the following new section:

SEC. 703. FIRE FIGHTER AND EMERGENCY SERVICES TRAINING

The Attorney General may award grants in consultation with the Federal Emergency Management Agency for the purpose of providing specialized training or equipment to enhance the capability of metropolitan fire and emergency service departments to respond to terrorist attacks. To carry out the purposes of this section, there is authorized to be appropriated \$5,000,000 for fiscal year 1996."

RESOLUTION

WHEREAS, the International Association of Fire Chiefs' (IAFC) Hazardous Materials Committee recognizes a critical need for increased planning and training in order to ensure proper response and mitigation for incidents of terrorism involving hazardous materials; and

WHEREAS, the bombings of the World Trade Center in New York City (NY) and the Alfred Murrah building in Oklahoma City (OK), both involved some type of explosives, which are considered as hazardous materials; and

WHEREAS, the recent event in the Tokyo, Japan subway system made real the threat posed by deadly biological (etiological) weapon/materials in the hands of terrorists and which creates a more horrific and life-threatening problem than any other hazardous material problem yet known; and

WHEREAS, hazardous material teams have done an exemplary job in controlling the known chemical problems in our society given the proper training and equipment to do that job; and

WHEREAS, hazardous material teams presently do not have the proper knowledge, training or specialized equipment to handle incidents involving biological weapons/materials, thus exposing the members of such teams to great personal risk including loss of life:

NOW THEREFORE BE IT RESOLVED, that the International Association of Fire Chiefs' Hazardous Materials Committee respectfully asks Congress to appropriate adequate funding, as is proposed in the Fire Service Amendment to HR 1710, to help hazardous material teams safely and properly mitigate the effects of terrorist attacks. These local or regional teams from the fire and emergency services are our nation's first responders during the initial response to a terrorist attack involving hazardous materials.

Adopted by the IAFC's Hazardous Material Committee on this sixteenth day of June 1995.

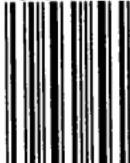
Chief John Eversole
IAFC Hazardous Material Committee Chairperson



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